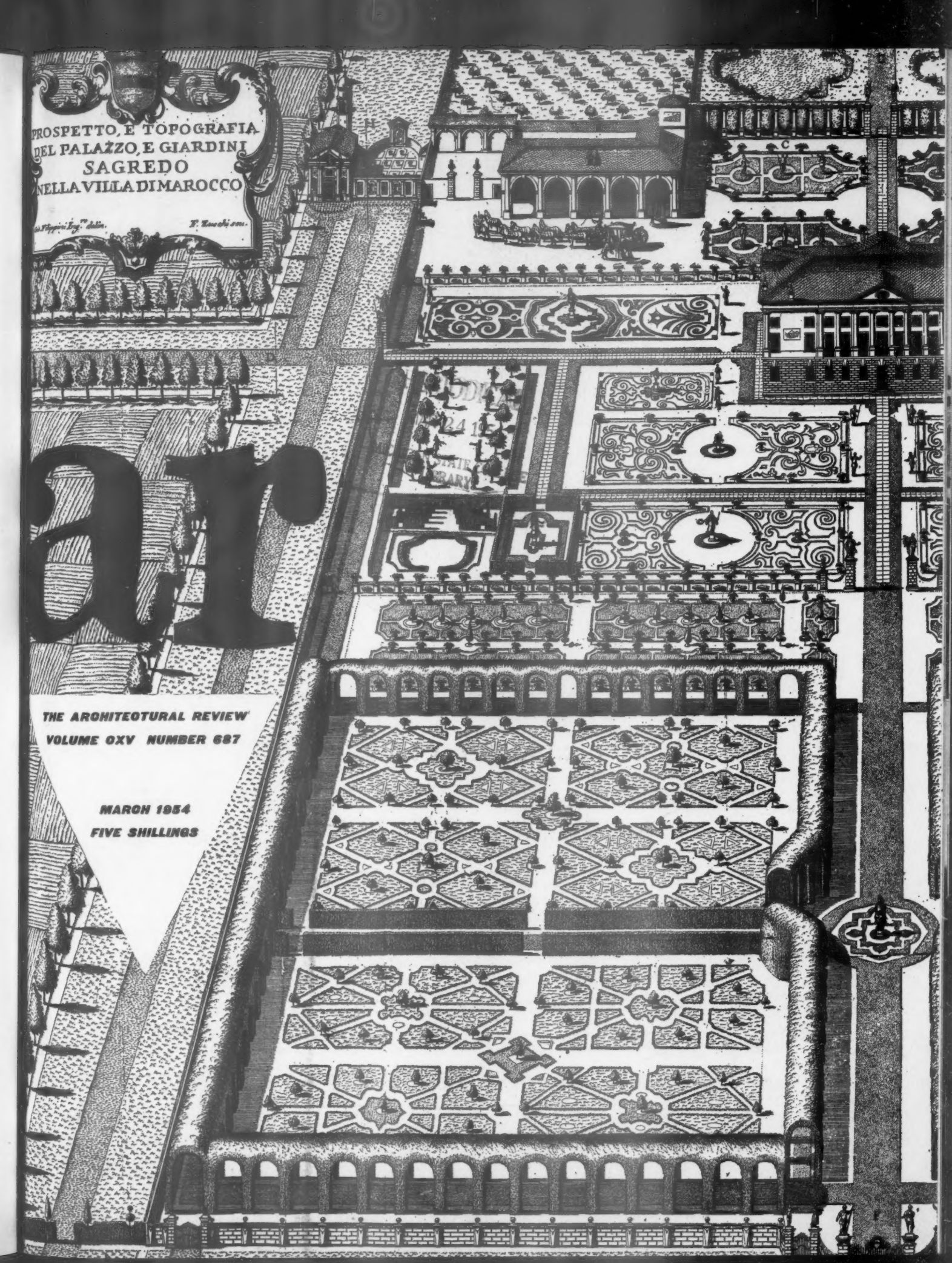

architectural review

THE ARCHITECTURAL REVIEW
VOLUME CXV NUMBER 687

MARCH 1954
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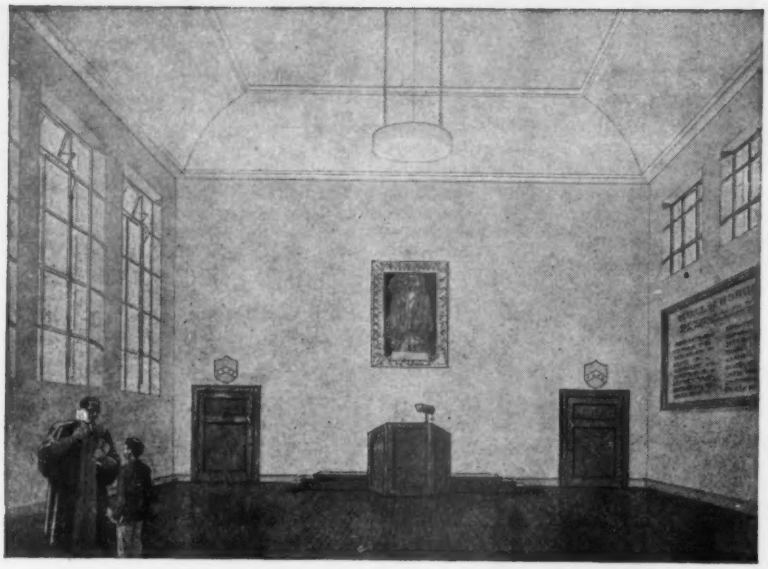

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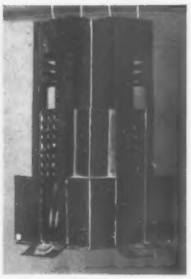
MARGINALIA

Charles Rennie Mackintosh

To commemorate the 25th anniversary of the death of Charles Rennie Mackintosh, the RIBA brought to London the exhibition of the architect's work, arranged by the Arts Council, and first shown at last summer's Edinburgh Festival. On the day of the actual anniversary, Dr. Howarth, the biographer of Mackintosh, gave a talk on his life and work. Thus students and admirers of Mackintosh's work were given a unique opportunity to look at and hear about his achievement.

In this exhibition the full measure of Mackintosh's genius could be perceived; it was valuable among other things in showing models of executed as well as of unexecuted buildings, several early sketches and a number of paintings both early and late. From the model of the Glasgow School of Art one could get an excellent idea, probably a better one than from the actual building, of its formal structure, and from the model of the library, of its complex spatial interpenetrations.

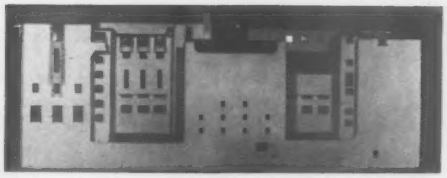


Above left. The rarely seen Dalhousie Street Facade of the Glasgow Art School (from the model in the recent exhibition of work by C. R. Mackintosh at the RIBA). Above right. A lampshade from the Art School Library, which clearly shows the balance Mackintosh achieved between the functional and the decorative.

One problem that still remains to be solved is the relationship of Mackintosh to Vienna. He was certainly well known there by the end of the century, through publication in the *Studio** and in 1900 was invited to Vienna to take part in the exhibition of the Secession. It seems that he even designed some furniture in Vienna, but that point has not been cleared up. Nor has it ever been investigated what personal influence Mackintosh had in Vienna.

One thing seems certain: Vienna had no influence on Mackintosh, at least not the people of the Secession. Though it seems that one man had—an outsider—and a violent enemy of everything the Secession stood for,

* A motif, illustrated in *The Studio* and taken from the Buchanan Street tearoom mural, wandered to Vienna and there settled on the railings of a suburban park.



A view of the rear of the Glasgow model making it possible to see the whole facade at one glance; the library block is on the left, showing the various oriels and penthouse studio roofs which serve the rooms on this side of the building.

Adolf Loos. Because of this enmity it appears unlikely that the two men met, though Loos having been to England and the USA must have spoken English and his love and respect for everything English might have prompted him to see and talk to Mackintosh; we do not know, but it is obvious that Mackintosh took up motifs used by Loos in his interior decoration and in Loos' works occur motifs which Mackintosh had used first.† This problem is an urgent one and ought to be followed up as long as some eye-witnesses are still alive.

† Facade of Willow Tearoom 1904 to shop front Vienna 1923. The House at Northampton 1916 to House Tristan Tzara, Paris 1926, House Moller, Vienna 1928, House Müller, Prague 1930, also spatial arrangements in interiors.

The London Survey

As from January 1 of this year, Dr. F. H. W. Sheppard has been appointed General Editor of the *London Survey*. His appointment was made by the London County Council, who now—sixty years after the inception of the *Survey*—have taken on the full responsibility for the preparation and publication of the volumes to come; the Survey Committee, though not yet dissolved (they are planning a monograph on the College of Arms and other tasks may come up) will cease to be connected with the work from now on.

Although the LCC had extended a helpful hand to the Committee during most of its existence, its members had so far undertaken all the work, research as well as editorial, in a voluntary capacity. The Survey Committee can pride itself on being the first to conceive the idea of compiling and printing a register of buildings of historic interest and architectural merit; they thus preceded, by precisely fifty years, the Planning Act of 1944 in which such a register for the whole of England was initiated and, by fourteen years, the foundation of the Royal Commission on Historical Monuments.

The moving spirit behind its foundation was C. R. Ashbee. At Essex House in the east of London, where he had established a Guild and School of Handicraft, which included a printing press, the first three volumes were carefully and beautifully printed. In 1895 the Survey Committee was able to secure the preservation of Trinity Hospital in Mile End Road, to which the first monograph was dedicated. A year later the LCC took up the cause of the Committee and obtained its first Local Authority statutory powers to take its own measures for the protection of ancient buildings. The scope of the *Survey* was at an early stage extended from the East End to include Chelsea and then the whole of the County.

In 1908 the Royal Commission on Historical Monuments was set up and thus some measure of recording the architectural heritage of all England was assured. In that year, too, THE ARCHITECTURAL REVIEW began to publish illustrated monthly progress reports of the Committee's work. From 1910 onwards the LCC not only carried the main financial burden of the *Survey*, but also shared with the Committee in the preparation of the volumes. There is certainly no other municipality in the world which records its monuments pictorially and by the written word with such meticulous care, attention to detail, search for truth, and it must be added, with such affection, as the County of London.

S.L.

Architects in this Issue

Architect of Three Houses (pages 162 to 167). SERGIO BERNARDES is one of the most distinguished of the second-generation modern designers of Brazil, started his working career as an assistant without qualifications in architecture, and had to wait for a slump in building before he had time to rectify this omission. His career as an architect in his own right began in the field of large scale planning and he established a solid reputation by his handling of the Vila Naval neighbourhood near Rio, and his original work for the nation-wide programme of Tuberculosis Sanatoria. In the last few years, however, he has built up a second reputation as a craftsmanly and adventurous designer of private houses using both traditional and technological materials with equal sympathy. Currently reported to have over a score of houses in hand, as well as a high-rental residential development on a cape in the bay of Rio, he is also the designer of the round church in Sao Paulo, which was previewed in THE ARCHITECTURAL REVIEW for July, 1953, and the high esteem in which he is now held has been confirmed by the award of the Sao Paulo biennial prize for Brazilian architects under 35 years of age to Bernardes for the Soarez house illustrated in this issue.

Architects of Stockwell Garage (see pages 185 to 186) are Adie, Button and Partners. GEORGE MOUNTFORD ADIE was born in London in 1901, where he received a catholic education, including brief excursions into the realms of law, higher mathematics and the sciences generally. Then, wishing to make money quickly, he turned from a profession to finance and starting as an office-boy in a City banking-house, he became within five years a partner in one of the oldest firms of City brokers, with a remuneration on the scale of the salary of a Cabinet Minister.

At the age of 28 he decided that there was nothing of real interest in finance . . . other than finance, and so, fearing that his brain would become completely moribund, he turned his back on the flesh-pots of the City and devoted the next five years to an intense and even at times almost feverish study of the traditional crafts of East Anglia and the arts generally. He very soon began to see how all these different subjects come together and are related in architecture, which from then on became his one single study—architecture in the fullest sense and approached from the widest angle.

In 1934, with no respite for gestation, he started a practice in London with Athenaeum Court, Piccadilly, as one of his first jobs. Other work followed and then two years later F. C. Button, bringing from his side a wide experience, particularly of industrial architecture, joined the firm and between them they founded the present partnership.

Adie, Button and Partners discussing the model of a recent project. Left to right: J. E. Parsons, G. M. Adie, F. C. Button, S. H. Warren, P. A. Warre Cornish.

Their aim is that the partners should, together, be able to import all the essential qualities of the ideal architect—qualities never normally to be found in a single individual—and by sympathetic functioning achieve a unity in action approximating to this ideal.

Further work included 'Charters,' Ascot, a millionaire's fantasy described by Christopher Hussey as 'establishing for the English country house a new but basically classical form'—and, by contrast, the restoration of Elizabethan Wakehurst Place, a work of equal magnitude. The firm has also been responsible for many commercial and industrial buildings, including a project for the first English skyscraper, a twenty-three storey block in Leeds.

EARLY RAILWAY ARCHITECTURE. Still standing after 110 years, with no more maintenance than occasional repointing of the joints, these masonry arches between Chorley and Euxton in Lancashire are a remarkable and little-known monument of the functional tradition. Spanning 27 feet over the tracks, they serve to brace the walls which hold back the unstable soil through which the cutting had to be driven, and their stone-laying is an excellent example of that semi-random technique, with large bossed stones at points of structural emphasis, which distinguishes so much canal and railway work of the north-western counties.

CORRESPONDENCE

Townscape

To the Editors
THE ARCHITECTURAL REVIEW

SIRS,—With great interest I follow your articles called 'Townscape,' a nice word that is untranslatable in Dutch. Of course my heart swells with pride, when I see good examples taken by you from our dear country! The article in your issue of October, 1953, about a new centre for Basildon is the reason for this letter. Many observations in this article met with my full approval, e.g., the necessity of a certain closeness in contrast to the openness of the usual suburban neighbourhoods. However one remark must be made: the new plan you propose is for me an enumeration of fine situations taken from old towns. Thus this new town will be interesting, but it will not be typical for these times, it will not be modern in the right sense of the word. Just as a building should tell something about its own time, so should a city-plan reflect the ideas and the feelings of the people who created it.

Moreover this plan could have 'grown' like the plans of old cities, it does not have the appearance of one that was planned at once. In my opinion it bears too much the character of something proceeding from a series of accidentalnesses, instead of being created by one man.

Yours, etc.,
Ir. W. H. ENNO VAN GELDER c.i.

Bornerbroek.

Mr. Cullen writes: *The rubbing together of two branches of a tree may accidentally produce fire, but the observation of this accident and its application by an intelligent savage to produce fire whenever he needs it is no accident. Similarly the observant Townscaper may draw emotional fire from the accidents of yesterday, but that does not invalidate the power of the emotion when once its origin has been understood. Townscape is, in my view, the putting of a match to the neatly laid but unlit fire of modern scientific planning (can this be Mr. van Gelder's mental picture of the Modern City?), to make it blaze and warm the heart and soul of man. Of course one doesn't always have to rub two sticks together to get a fire, there are modern methods of doing it 'typical of our times' and if I have not always succeeded in purging the historical out of the precedent I apologise.*

The New Towns

To the Editors,
THE ARCHITECTURAL REVIEW

SIRS,—With great interest and full agreement, I have read Mr. J. M. Richards's piece on the New Towns, which is courageous and much to the point. It fits my own observations perfectly. I have always been fascinated by the phenomena of space. Also on the negative example of Harlow, I sharpened my conception of what 'human scale' is; e.g., I have tried to find a definition for an optimum size of a plaza in a core. Observing that the 'atmosphere,' the 'intangibles,' are decisive for the success of a space—for instance, lecturing in a room packed with people has a stimulating effect both on the speaker and on the audience, but the effect is opposite if the hall is half empty—I should like to say that a plaza should be just *barely big enough for the peak hour traffic;* then it will have human scale. Of course, that is still undetermined enough since the number of people using a plaza may increase or decrease in time. However, the beautiful examples in South Europe give evidence that it is rather more advantageous for the vitality of a space when it is too small than when it is too large.

Yours, etc.,
WALTER GROPIUS.

To the Editors
THE ARCHITECTURAL REVIEW

SIRS,—I should like to reply to your comments on my letter published in the January issue. I quite agree that when creating a design for urban environment we should plan the parts as thoroughly as we plan those of an individual building. Nevertheless in an imperfectly planned economy is it not inevitable that towns will continue to expand and decay, in response to forces from without and within? For this reason, when designing a new town would it not be preferable to plan for a population below the desirable maximum, in order to allow for possible future growth? If such growth does not become apparent after a period, then new population can be brought in as part of a further planned extension.

My chief objection to new towns is that, designed once and for all, not easily changeable and not likely to change, they will become period pieces, unable to adjust themselves to changing conditions as all vigorous communities have done in the past.

I quite agree that planned dispersal of population is necessary. But need it take the form of new towns? Over most, though not quite all, of Britain we have urban centres distributed so that few people are not within easy bus reach of the amenities of a town however many of these centres are undersized, though serving large areas. They have insufficient population themselves to be able to offer all the urban amenities that people today demand.

Why not decentralize to such towns, thus making them more effective centres, instead of creating new towns to compete with them? Provided the new development is carefully adjusted to the scale and character of the existing centre such additions can be as 'organic' as any that happened haphazardly in the past. Perhaps the LCC will show the way in their planned extensions to Bury St. Edmunds, Sudbury, Ashford, Thetford, Basingstoke, and other towns in the Home Counties and beyond.

Yours, etc.,
Cambridge. D. W. LLOYD.

ACKNOWLEDGMENTS

Acknowledgment should have been made to Richard Costain Ltd. in the February issue by whose courtesy the colour blocks were made available.

MARGINALIA: 1-3, Read, Arphot; Adie, Button & Partners, Toomey, Arphot. FRONTISPIECE: Kenneth Browne. QUAKER DYNASTY, pages 157-161: A. C. Cooper. THREE HOUSES, pages 162-167: 1-9, 12, 13, Aertsens Michel; 10, Kazmer. AMERICAN VILLAS, pages 168-179: 1-2, 4-6, 8, 21-24, 26, 28, Wm. King Covell. BUS GARAGES FOR LONDON TRANSPORT, pages 180-186: 1-4, 6, 7, 9, Galwey, Arphot; 5, 8, Toomey, Arphot; 10-12, John R. Pantlin. FIVE TYPEWRITER SHOWROOMS, pages 187-190: 1-5, Alfred Cracknell. CASEBOOK PRECEDENTS, pages 191-194: drawings by Gordon Cullen. CURRENT ARCHITECTURE, pages 195-198: *Boiler House for Building Research Station:* John R. Pantlin; *School by Architects Co-partnership:* Galwey, Arphot; *Community Centre at Hemel Hempstead:* John R. Pantlin. MISCELLANY, pages 199-204. *Venetian Gardens:* 4, Basile, 5, 6, 8-13, Georgina Masson, 7, E. P. T. Roviga; *Exhibitions:* 1, John R. Freeman, 2, Arts Council of Great Britain, 6, Keystone Press; *Westminster Cathedral:* Galwey, Arphot. SKILL, pages 207-221: *Design Review:* 2, 15, Studio Briggs, 6, Entwistle & Co., 7, Hobbes Offen, 10, Studio Lisa, 11, 25, 31, Wainwright, 12, A. C. K. Ware, 14, Murgen-Wells, 19, 20, 27, Guy Gravett, 26, Fredk. Thomas; *New Building in Denmark:* 2, Nordisk Pressefoto, 5, 6, 9, 10, 11, Struwing, 15, Janals Co., 20, 22, 23, Erik Hansen.

The winning design for extensions to Sheffield University will give its authors—Gollins, Melvin, Ward and Partners—the opportunity to build the first large exercise in Collegiate Modern to be seen in this country. The buildings will develop a form of open precinct between them, but will not enclose a walled-in courtyard, as may be seen in Kenneth Browne's impression opposite looking from the corner of the thirteen-storey Arts block toward the contrasted styles on the other side—the solid Collegiate Gothic of the existing buildings and the glazed corner of the new Library. Between the old and the new a wide flight of steps rises to a concourse which gives access to the buildings on either side, and to the open parkland beyond.

F. D. Klingender

QUAKER DYNASTY

THE HISTORICAL SIGNIFICANCE OF COALBROOKDALE FOUNDRY

Just how far the Protestant Reformation can be said to have created the climate in which modern capitalism could develop is a problem which has occupied social historians ever since Max Weber published his famous essay on *The Protestant Ethic and the Spirit of Capitalism* half a century ago. The discussion has hitherto been in the main concerned with the doctrines and beliefs emerging from the great controversies of the sixteenth and seventeenth centuries which are said to have encouraged habits of accumulation, rather than display. But comparatively little is known of the precise manner in which the paradoxical transformation of religious reformers into captains of industry could have come about. Dr. Raistrick's fascinating analysis of the family and business papers of the Darbys of Coalbrookdale[1] strongly suggests that for this vital problem it is the eighteenth century that is the key period, not the sixteenth and seventeenth, at least in so far as the Quakers and their remarkable role in the English industrial revolution are concerned. About 1700 the Quakers were a small sect of farmers and craftsmen, with a sprinkling of merchants and landowners, persecuted incessantly until 1689 and still liable to imprisonment for non-payment of tithes. Yet within a generation this compact and homogeneous body of uncompromising 'enthusiasts' had split, as it were, into two strictly endogamous clans, which, though still united as Friends, were, nevertheless, divided socially along the line of a new class-cleavage that was beginning to be marked with the growth of

[1] Arthur Raistrick: *Dynasty of Ironfounders: The Darbys and Coalbrookdale*, London, Longmans, Green & Co., 1953 (30/-).

industrial capitalism. The members of the first of these clans—families such as the Lloyds, Barclays, Gurneys or Frys—were so successful both in their individual pursuit of worldly wealth and in the art of supporting one another that their descendants still occupy a remarkable proportion of the key positions in Britain's economy. But the second clan contributed materially to their success by serving these same masters loyally for generation after generation as humble foremen and technicians. Just how this cleavage occurred is an intriguing problem of group psychology. What qualities, for example, enabled the farmer's son Abraham Darby I to persuade a group of weighty Friends, as soon as he had finished his apprenticeship in 1699, to join him in setting up a brass foundry at Bristol? And why did another farmer's lad, John Thomas, whose grandfather had died in prison for the Quaker cause, agree to serve the new firm at the conclusion of his apprenticeship for his keep and £7 a year, although it was he who had invented the method of casting 'iron-bellied' pots in sand that caused the whole enterprise to be transferred to Coalbrookdale and was the economic mainstay of the business for more than a century?

Perhaps it was the conviction that in a community of the elect all must serve God in their respective callings which served to bridge this growing social differentiation within the sect between a minority who became business leaders and the majority content to work for them. But whatever its cause, there can be no doubt, in the light of the history of the Coalbrookdale firm, of the Quakers' extraordinary achievement in providing an élite corps not only of captains but also of non-commissioned officers for the industrial revolution.

To establish a position of leadership was not, however, enough. Not the least interesting result of Dr. Raistrick's study is the light it throws on the way in which the Darbys consolidated their position and maintained it for a century and a half. Through the singular fact that almost all the Darby men died very young (Abraham I and III, for example, both at 39), no less than ten generations of managing partners controlled the company between 1708 and 1851, thus preventing stagnation and also broadening the controlling personnel through the necessary inclusion of brothers-in-law, trustees for minors, and a succession of highly competent wives and widows. In this way members of the Goldney, Ford, Reynolds, Rathbone, Dickinson and Dearman families entered the Darby dynasty both as relatives and partners, and most of them retained interests in other enterprises as well (as did some of the Darbys themselves), thus strengthening the company's resilience in difficult times. Moreover, as its business expanded from a capital value of about £3,000 in 1710 to £95,000 in 1798 and £365,000 in 1851, different members of the family could take charge of its different units, the Ketley works, for example, or the Madeley furnaces, or the mines, but also the malthouse, corn-mill or grocery business through which the daily needs of this ever more integrated industrial combine were supplied.

Constant travelling, both on business and on Quaker missions, and a corresponding flow of visitors to the Dale, further extended these links with the Quaker community as a whole and with its leading hierarchy. Thus, while the wholesale supply of pig iron and pots to Bristol served to maintain close contact with the influential merchant-bankers of that port, each new generation of Darby partners learned its business by riding out to local fairs to collect debts of a few pounds each from

hundreds of regular country customers. And the Darbys were no less assiduous in attending Quaker meetings over a wide area, setting out, for example, in 1754, in a cavalcade of 14 to ride to a Swansea meeting, an adventure described in a surviving letter by Hannah Darby, then a girl of 18.

It is only in the light of this complete fusion of the spiritual and worldly in these people's lives that the paternal relations with their employees can be understood. The Darbys built cottages, schools and meeting houses, and concerned themselves in many other ways with the welfare, not only of their co-religionist foremen, but also of their workmen at large. But although they hastily distributed their stock of corn, they were unable to stop the bread riots that swept over the neighbourhood in 1756, and it would be instructive to know what their working people felt about later efforts to tighten up discipline, for example, by imposing fines of from 1s. to 2s. 6d. for lateness and similar misdemeanours at the Ketley works, at a time (c. 1800) when only foremen earned as much as 12s. a week. It is a grave blemish in an otherwise admirable book that no mention is made either of trade unions or of whatever echoes Chartism may have stirred up in the Dale, more especially as so much stress is, deservedly, placed on the welfare work of the firm.

The historical significance of the Coalbrookdale Company is not, however, exhausted by its economic and social achievements, nor even by its unique contributions to the progress of technology. More than any other industrial enterprise in the country Coalbrookdale came to epitomize that 'new mastery over nature gained' which the romantics of the eighteenth and early nineteenth centuries acclaimed. The list of artists who are found to have responded to its spell is continually increasing. To the provisional Coalbrookdale iconography I was able to record in 1947[a] Dr. Raistrick has now added a charming drawing by Rowlandson and two remarkably detailed pencil sketches made by Joseph Farrington in 1789. One of them must have been taken from nearly the same spot on Lincoln Hill from which the Welsh artist William Williams painted one of two large views of the Dale and its works in 1777. These have recently come to light in a Lincolnshire country house and are here published (page 161) for the first time by kind permission of Mr. Marshall Spink. In a glowing frontispiece to the book John Piper still pays tribute to the magic of this site.

More important still is the evidence now produced for the Darby's own active contributions to the arts. First with regard to the famous Iron Bridge: the *Minute Book of the Proprietors of the Ironbridge*, 1775-1798, which came to light only in 1950, proves finally that it was Abraham Darby III, and not Wilkinson, who was the driving spirit behind this enterprise. It also shows that, while the Shrewsbury architect T. F. Pritchard, who is mentioned as the designer of the bridge on some contemporary prints, was in fact asked to submit a plan in 1775, the proprietors were still inviting tenders for a structure in stone, brick or wood some eight months later, so that the existing iron bridge was almost certainly not merely cast but also designed by Darby himself, with the help of his foreman patternmaker, Thomas Gregory.

The aesthetic significance of this beautiful bridge as an expression of that peculiar combination of the 'puritan ethic' and the 'spirit of (early) capitalism' which was embodied in the Darbys' way of life in 1779 is strikingly underlined by the changes

[a] In *Art and the Industrial Revolution.*

which took place in the Dale between that date and 1851. As the wealth and social influence of the leading Quaker families increased, a feeling of tension began to appear between the 'plain' Friends and a minority whom they rebuked for going 'gay.' In 1798, for example, John Gurney the banker and his seven daughters visited their relatives at Coalbrookdale. When the others continued their pleasure trip into Wales, Elizabeth Gurney stayed behind and was so deeply affected by the 'plain' ways of the Darbys (notably Deborah, a famous worker in the cause) that all her doubts were resolved and she started on the course that made her the philanthropist Elizabeth Fry. The Darbys, who never ceased to live among their working people, maintained this 'plain' outlook until the second quarter of the nineteenth century. But when Abraham IV and Alfred (the last of the family to control the company) took over the management in 1830 it was not only the technical and business side of the enterprise that was thoroughly overhauled. Though living at the works, their uncle Francis, a son of Abraham III and then a man of 47, had long become a devotee of art. It was thanks to him that the unlimited possibilities of cast-iron as a medium for the plastic arts was now perceived and that the Coalbrookdale Company sought acclaim at the Great Exhibition of 1851, not as the country's most experienced engine-builders or constructional engineers, but as its leading art-casters. Among objects placed on view by it were the sumptuous gates still in use in Hyde Park, a giant 'Eagleslayer'[3] enclosed in an 'ornamental rustic dome,' bronzed and 46 feet high, including the vane, and a mantelpiece, 'of cast iron electrogilt, the mouldings marbled,' 'with decorations illustrative of deerstalking, boar-hunting and hawking.' While it seemed adequate until now to interpret such baubles as expressions of the elation the captains of industry must have felt in the mid-nineteenth century on attaining the rank of grandees, Dr. Raistrick's researches have now added a new dimension to our understanding of them and of the contrast between their flamboyance and the serene simplicity of Abraham Darby's iron bridge of 1779. For in this particular case, at any rate, this contrast in taste must, surely, also reflect something of the tension between the ideals of 'plain' Quakerism and the 'gay' life, and of the recoil from the former as experienced by a romantic who had lost his father at the age of 6 and was brought up by a galaxy of saintly aunts.

[3] Still to be seen, without its rustic dome, in front of the Bethnal Green Museum, as Professor Pevsner has kindly pointed out to me.

Details from two oil paintings, 40" × 50", by William Williams, signed and dated 1777, exhibited at the Royal Academy in 1778; above, 'A morning view of Coalbrookdale and part of the extensive Iron Works;' and below, 'An afternoon view of Coalbrookdale and part of the extensive Iron Works from Lincoln Hill terminated by the celebrated Mountain Wrekin.'
They are here published for the first time by kind permission of Mr. Marshall Spink.

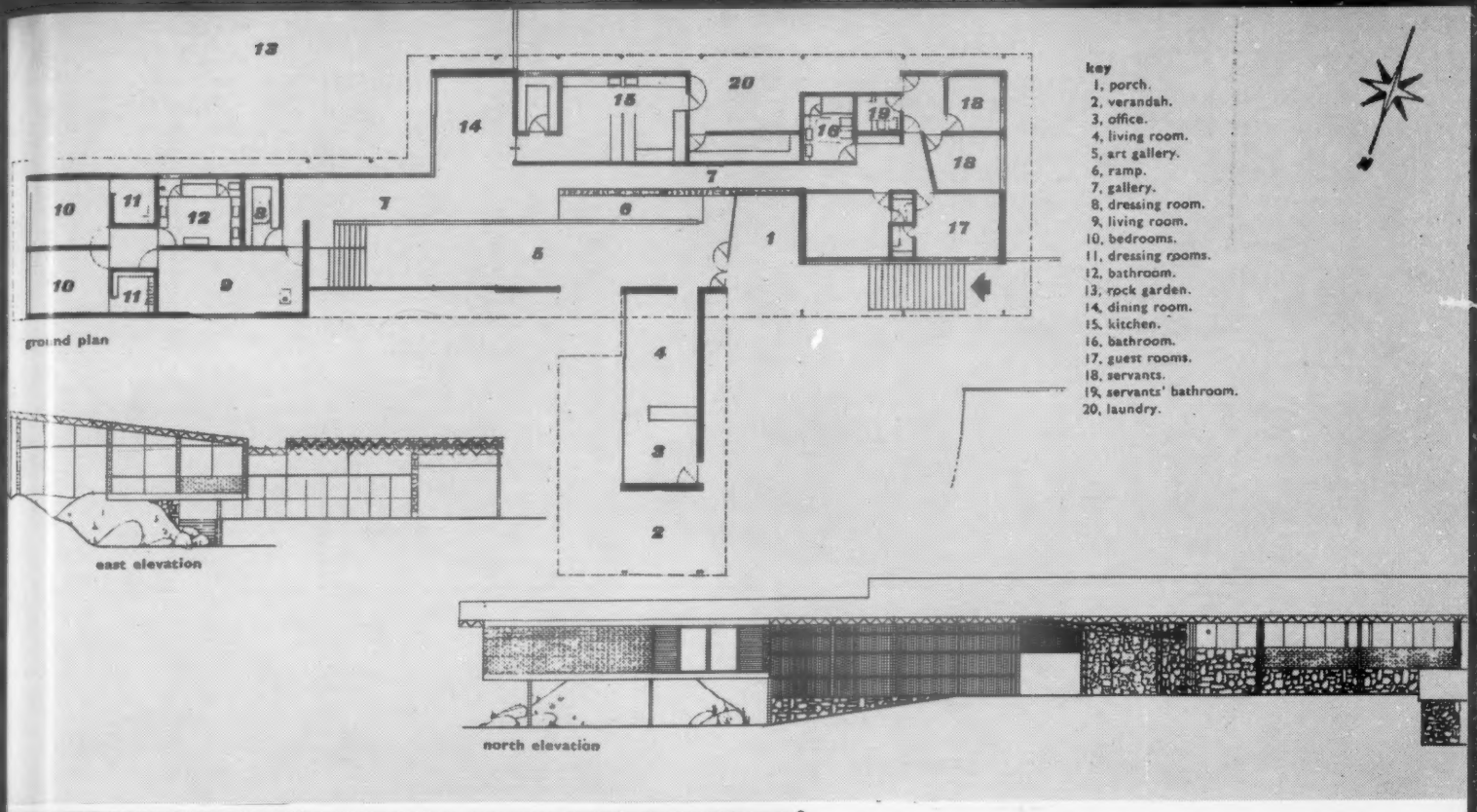
The growing reputation of Sergio Bernardes has received confirmation from the Architecture Section of the Second Bienal at Sao Paulo, which has awarded the prize for Brazilian architects under thirty five to the house illustrated and described on this and the facing page. The mixture of vernacular and technological materials and the imaginatively simple planning are both typical of this young Brazilian, who had already built up a reputation as a planner before he turned to house design.

THREE HOUSES BY SERGIO BERNARDES

1 SOAREZ HOUSE

1, block containing family rooms, and the link with the rest of the house which will finally be enclosed to form a picture gallery. 2, continuation of 1 with guest rooms at the end. 3, the sitting-room and, 4, the dining-room.

1



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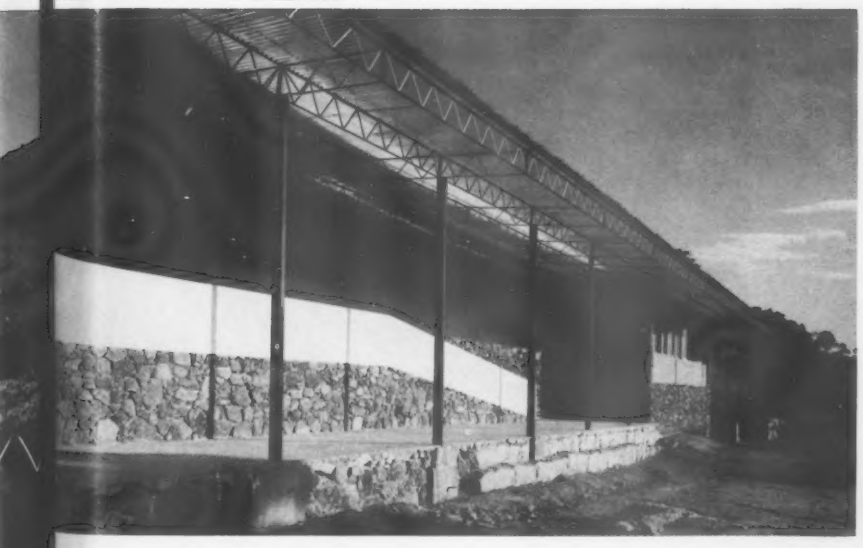


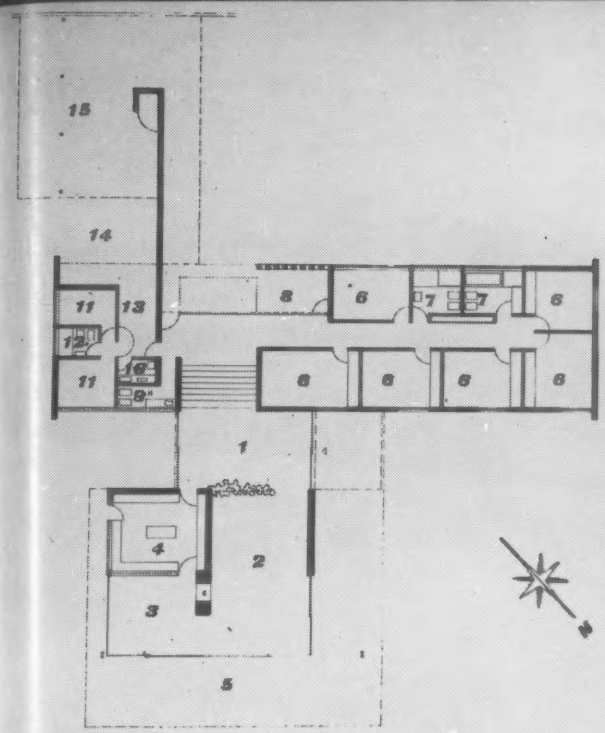
3

4

Because of its site in the rough hills above Petropolis, it was impossible to bring large or heavy structural units up for this house, and the designer has therefore made the maximum use of local materials—brick and stone—and of lightweight prefabricated units—aluminium trusses and corrugated sheeting, which are used to form the roof, and then covered with a light insulating thatch. The house lies east-west, and the accommodation may be divided into three main zones: at the eastern end of the long plan are the family rooms; at the western end, beyond the services are the guest rooms; while the central part of the plan contains rooms of a social or sociable character—a dining room on the southern side under the highest pitch of the roof, beyond the spinal corridor which connects the two ends of the house, while on the lower level, in front of this corridor, a space will eventually be enclosed to form a picture gallery, but this will wait on the building of the office/living room block in front of the house.

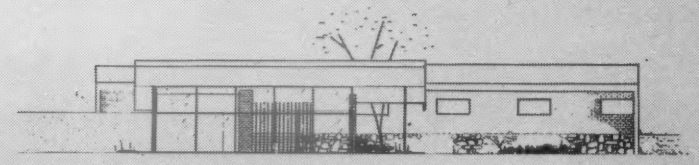
2 SAMPAIO HOUSE

5, the *marquise* which shelters the day-rooms. 6 shows the connection with the block containing bedrooms and guest rooms, and 7, the entrance to it. 8, the living-room looking past the two-way fireplace to the dining-room.

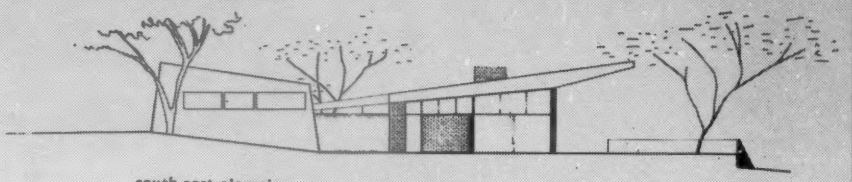


key

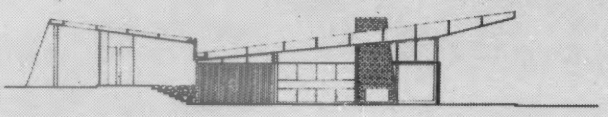
1, car port.
2, living room.
3, dining room.
4, kitchen.
5, verandah.
6, bedrooms.
7, bathrooms.
8, screened verandah.
9, w.c.
10, kitchenette.
11, servants' rooms.
12, servants' bathrooms.
13, laundry.
14, courtyard.
15, garage.



north-east elevation



south-east elevation



cross section

6

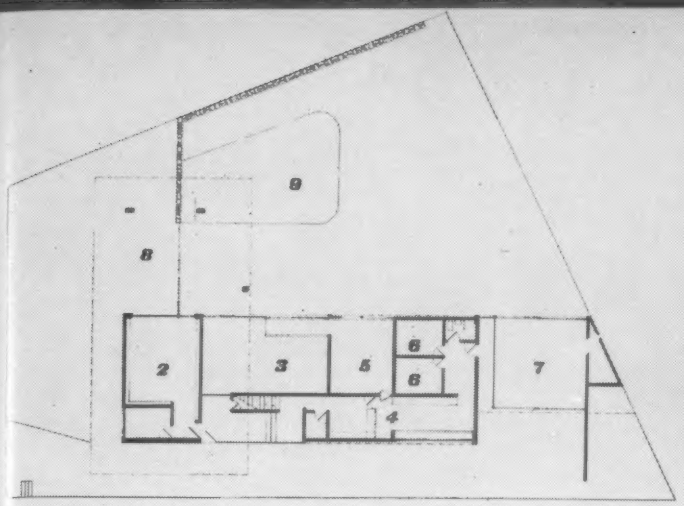
8

A clear functional analysis has produced three major domestic units articulated round a central hall, which also serves as point where cars can pick up or set down passengers while passing through the house to or from the garage. On the lower level, under the enormous 'marquise' are the day-rooms—living room, dining and kitchen-cum-butler's pantry. On the other side of the hall, up a flight of steps, are the service rooms and garage on one side, and bedrooms and guest rooms on the other. Construction is in reinforced concrete, stone and brick, floors are tiled in red, the day-room ceilings are lined out in dark varnished wood, and the glazing under the marquise is in a greenish glass.

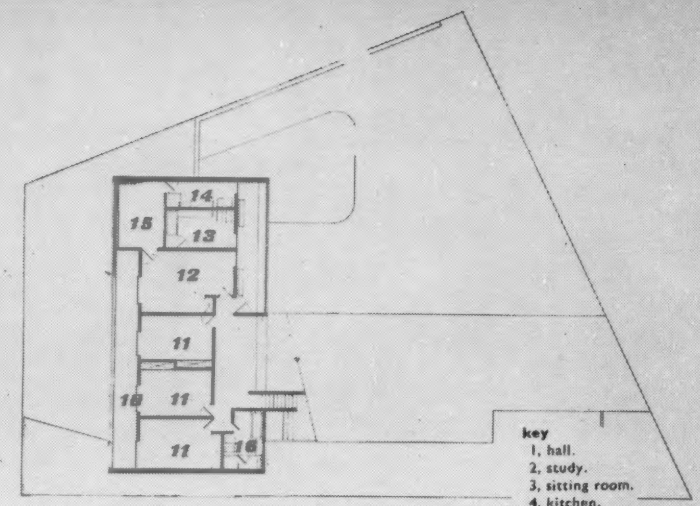
7

3 CABAL HOUSE

9 and 10, the covered terrace and garden seen from the sitting-room which has a butterfly roof, with a dining gallery at one end reached by a ramp. 11, main elevation of the bedroom block. 12, general view of the house and garden. 13, view from the road.

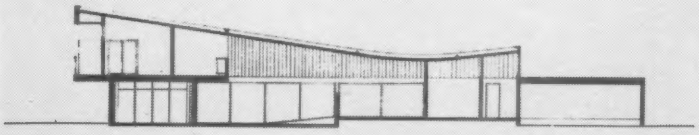


round floor

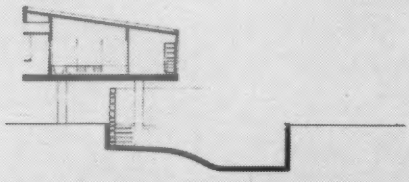


first floor

key
1, hall.
2, study.
3, sitting room.
4, kitchen.
5, dining room.
6, servants.
7, garage.
8, covered terrace.
9, proposed pool.
10, terrace.
11, bedrooms.
12, master bedroom.
13, bathroom.
14, w.c.
15, dressing room.
16, bathroom.



longitudinal section through living room block

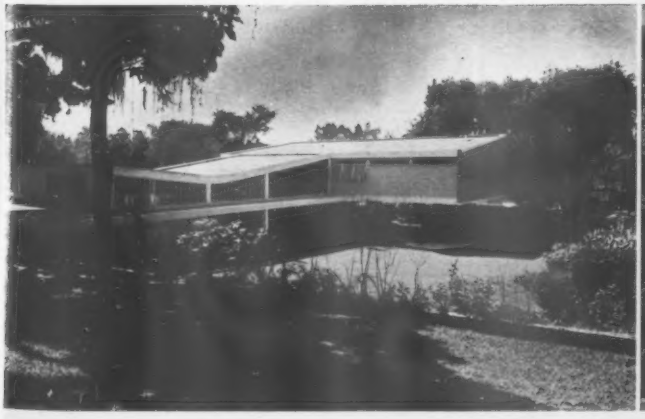


cross section through bedroom block

10

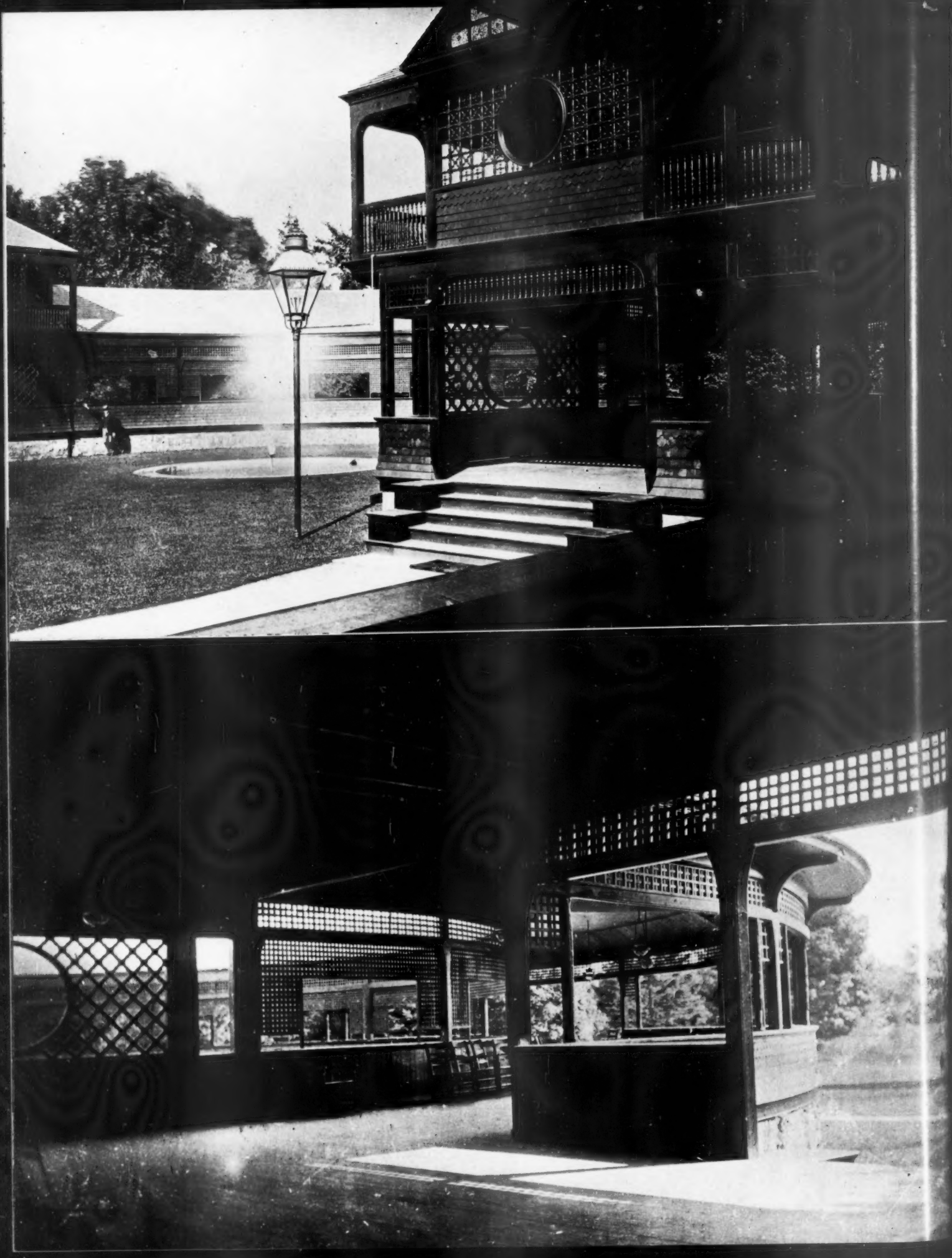
11

The site is fairly restricted for a house of this size, and the garden, which had been designed by Carlos Perry, is reduced to a kind of enclosed court between the two arms of an L-shaped plan. However, any excessive feeling of enclosure is avoided by the fact that the two arms of the L are on different floors, one fitted over the other and leaving a space under ; the two parts of the house are visually united by the common roof-line whose curvature has been determined, in part, by the slope of the mountain which forms a background to the house. Construction is of reinforced concrete and masonry, with aluminium window frames for most of the large glazing, while the roof is a concrete slab, with corrugated asbestos sheeting raised clear of its surface, leaving an air-space for better thermal insulation. The district of Rio de Janeiro in which the house stands is a semi-rural suburb, and a canal runs down the centre of the avenue.



12

13



Vincent Scully Jnr.

The prehistory of the modern house has so far been seen as an English development with continental echoes—from Philip Webb to Peter Behrens—and the obviously important American contributions of Richardson and Wright have been difficult to fit into this pattern. In the article below, Vincent J. Scully, Jnr. uncovers for the first time the missing connections: the progressive design tradition of American suburbia from Downing to Wright, a picturesque and eclectic tradition which included such talents as those of Alexander Jackson Davis (AR Jan. 1951) and—amazing as it must now seem—McKim, Mead and White whose long-demolished, but sensitive and highly original Casino at Newport is seen opposite, *and stands as an imaginary monument to the American suburb which has been wrecked in the intervening years (AR Dec. 1950* Man Made America*), but was then the green landscape of architectural adventure.*

AMERICAN VILLAS

INVENTIVENESS IN THE AMERICAN SUBURB FROM DOWNING TO WRIGHT

Within the last generation, critics and historians of modern architecture have turned their eyes more and more towards America. They have seen there whatever architectural qualities might serve best to bolster their own particular view of the direction which architecture should follow in the twentieth century. Le Corbusier in the 'twenties saw sky-scrapers, factories and grain elevators, the last two types especially indicating to him the mechanistic excitement of harsh geometries and the power of industrial forms. Giedion in the late 'thirties, impelled by an aesthetic formulated by Gropius and Le Corbusier, investigated as well some aspects of American domestic architecture and found what he was looking for, that is: simple structural techniques, 'plain walls' and an early apotheosis of the 'functional.' Bruno Zevi, reacting against Giedion, sees an 'organic' development in Wright and in the 'Bay Region Style' of the San Francisco area. Zevi's analysis of nineteenth-century American domestic architecture is, however, bounded basically by the researches of Giedion, and, in consequence, the foundations of the American 'organic' perhaps tend to elude him. The pro-found discipline of Wright's design is understressed, and European criticism of American architecture thus makes a rather exclusive sweep from the extreme of the concrete grain elevator to that of the redwood cottage—with, in some quarters, an exaggerated attention to forms of urban blight by no means restricted to America.

Actually, a study of American domestic architecture in the nineteenth century reveals a richly complex range of activity. For an American it brings into focus his formative century and thereby helps him to know himself. To a European it can illuminate the growing tensions of a culture almost but not quite the same as his own. It can do this because into its comparatively modest domestic building activities were poured cultural energies reserved in earlier centuries for projects of larger scale. On it, too, the American yearning for epic expression began to work itself out, as with Melville and Whitman, in the only materials ready to hand, in this case the free-standing house of moderate size. These houses provided the vehicle for an intense programme of invention which was to culminate in the architectural epic of Wright's career.

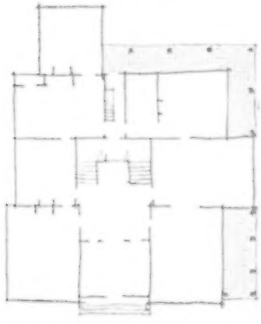
The architects who carried out this development were peculiarly free for a long time from academicism of any kind, and the vigorous growth which ensued was brought to a partial close in the 'nineties by some of the factors which harass architecture today: large-office practice, the division of activity, the closing of minds and the imposition of formulae of design. Thus the story of American domestic architecture in the nineteenth century is that of a freely developing way of building, and one which moved by 1885 towards its own large architectural order. This free, spatial and disciplined design was consciously imbibed by Wright from the Eastern architects, and he continues its tradition. Elsewhere I have been able to indicate, through a consideration of building in Newport, Rhode Island, that such a coherent development in American domestic architecture actually took place.[1] In this article I shall attempt briefly to isolate its main thread of invention in structure, space and massing and to show, parenthetically, that it was not confined to Newport and that Frank Lloyd Wright's work did in fact grow out of it.

We shall be concerned here mainly with a few of the cottages and suburban buildings of the early 'eighties, but we must first look briefly at some of the earlier aspects of the tradition out of which they grew. To say that the philosophical roots of the nineteenth-century single family rural or suburban house in America are Jeffersonian and Jacksonian is not to stretch a point too far. Jefferson's insistence upon the indivi-

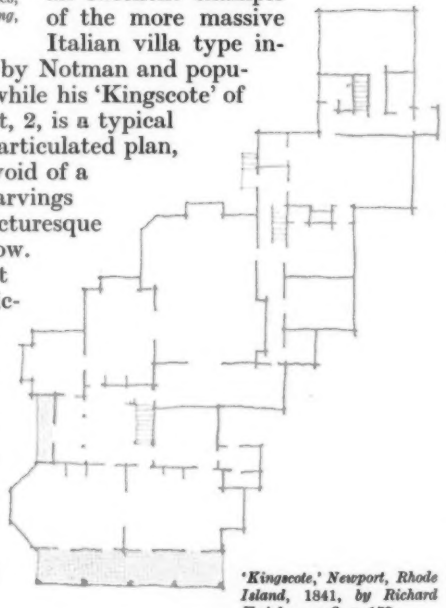
[1] See Antoinette F. Downing and Vincent J. Scully, Jr., *The Architectural Heritage of Newport, Rhode Island*, 1670–1915, Harvard University Press, Cambridge, 1952. Part IV ,'Nineteenth Century Resort Architecture,' pp. 117–163.

dual ownership of land, his abolition in the Virginia House of Burgesses in 1776 of the English system of entail, his preoccupation, following that of Locke, with the 'natural' superiority of agrarian over urban living, all entered deeply into the consciousness of early nineteenth-century America, and were in accord with the basically agrarian organization of its culture. These, coupled with a similarly Jeffersonian concern for labour and space-saving devices, formed a durable philosophy which had as its basis democratic, agrarian and utilitarian values. Jefferson's own attempt to create a new American architecture through classic geometries and the forms of antiquity proved much less durable, and the capacities for further growth of the American phase of the Classical revival—called generally in America the Greek Revival—were exhausted by the 1840's.

At this point, however, the principles of picturesque design, developing in England since the mid-eighteenth century, were introduced into America by Andrew Jackson Downing, a landscape gardener and the spiritual heir of Capability Brown, Repton and Loudon, the last of whom he indicated as his master. Downing produced the first and most important of those pattern books which were to be the main vehicle of the American development until 1876. These were *A Treatise on the Theory and Practise of Landscape Gardening Adapted to North America . . . With Remarks on Rural Architecture*, New York and London, 1841; *Cottage Residences . . .*, New York and London, 1842; and *The Architecture of County Houses . . .*, New York, 1850. In these books Downing, working with his friend and collaborator the architect Alexander Jackson Davis,[2] presented Italian villa and *cottages ornées* types which had been familiar in England since 1800, as in John Nash's Cronkhill of c. 1802 and his Blaise Hamlet group of 1811. Asymmetrical, both in plan and massing, and manipulating natural light in a richly pictorial manner, these broke out of the late Georgian box and developed a new sense of three-dimensional design. The King House at Newport by Richard Upjohn, built in 1845, 1, is an excellent example of the more massive Italian villa type introduced to America by Notman and popularized by Downing, while his 'Kingscote' of 1841, also at Newport, 2, is a typical *cottage ornée*, with an articulated plan, jagged massing, the void of a verandah and eave carvings which enhance the picturesque development of shadow.



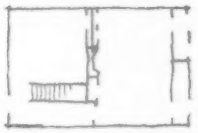
King House, from Country Houses, 1850, *by Andrew Jackson Downing, see* 1, *p.* 173.



'Kingscote,' Newport, Rhode Island, 1841, *by Richard Upjohn, see* 2, *p.* 173.

Downing then went beyond the purely picturesque, concerned himself with the very smallest type of house and with the realities of wooden construction, the cheapest method of building in most of the United States. He presented his Design V, in *Cottage Residences*, as the prototype of an 'American Cottage Style.' One version is of masonry, but the other is of frame construction, sided vertically with battens over the joints, 3. The windows are set in panels formed by continuous vertical stripping and become visually not holes cut into a wall but voids between vertically continuous structural studs. The plank and beam roof then overhangs deeply and casts a shadow upon the wall which emphasizes the vertical strips of the battens, and the basic expression of the house becomes not planar—not the 'plain wall' of Giedion—but instead skeletal and articulated like its frame within. Moreover, this expression of the frame is exactly Downing's reason for the use of vertical board and batten siding, and in his *Country Houses*, of 1850, he states:

> 'We greatly prefer the vertical to the horizontal boarding, not only because it is more durable, but because it has an expression of strength and truthfulness which the other has not. The main timbers which enter into the frame of a wooden house and support the structure, are vertical, and hence the vertical boarding properly signifies to the eye a wooden house.'



Design for a labourer's cottage from Country Houses 1850, *by Andrew Jackson Downing.*

Downing then presents as his first design in *Country Houses* a 'Labourer's Cottage' where not only is the boldly wooden skeletal expression of the new American 'Cottage Style' very evident, but which also in the nature of its programme reveals a concern for the dwelling of the poorest which is at least symptomatic of the Jacksonian egalitarian democracy of the America of the 1840's. Moreover, the orientation in this social project is still Jeffersonian in its essentials. It is towards the single-family house on its own plot of ground in an agrarian setting, or in that which will less and less successfully evoke the agrarian, the suburban setting.

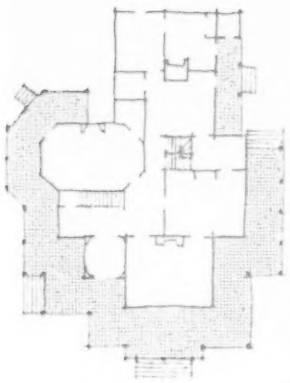
It will not be feasible here to discuss in detail all the aspects of this agrarian or suburban cottage style up to 1876,[3] but its architectural expression should be clear. Picturesque in its soft and darkening colours and in its rough textures—which revolted against what were to Downing the abstract white surfaces of the Greek Revival—it was most of all wooden building, dominated by a sense of its structural studs. The vertical continuity of its battens echoed visually the technical invention of the vertically continuous thin studs of the balloon frame, which was developing in the West at the same moment—although many of the eastern houses were never actually built in the balloon frame method. It was, in sum, a skeletally articulated 'stick style' in wood.

Such houses were built all over the United States, especially many in California during gold-rush days and afterwards, and much of the work of the Bay Region architects at the present time reveals the strong influence exerted upon them by these buildings. Wurster, Esherick, Belluschi, Dailey and others have all used vertically boarded and battened walls with overhanging plank and beam roofs, much as did Downing in the 1840's. Downing's picturesque looseness and suburban orientation have also been basic in much of their domestic design.

Carried by the pattern books, the stick style itself developed widely till 1876, and into it were poured increments of the Swiss chalet, of medieval half-timber, of Japanese frame construction and, indeed, of whatever types might be assimilated to enhance the expression of the skeleton frame. A strong reaction against it, carried first by the massive Italian villa types in the 'forties and 'fifties and then by sculpturally mansarded Second Empire types in the 'fifties and 'sixties, was generally played out by the early 'seventies, and the articulated stick style clearly emerged at this period as the exuberant and expressive carrier of the American vernacular in wood. The Jacob Cram, now Sturtevant, House, at Middletown, near Newport, Rhode Island, built in 1872, presumably by a local architect named Dudley Newton, may stand as an excellent example of this moment, 4.

[2] See *Alexander Jackson Davis*, by Wayne Andrews, AR, May, 1951.

[3] This has been done by the author in a paper on the 'Stick Style' in the *Art Bulletin*, vol. 35, 1953, pp.121–142.

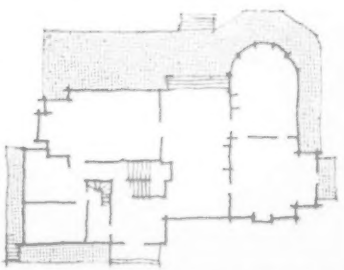


Jacob Cram House, Newport, 1872, by Dudley Newton, see 4, p. 173.

Structure, utility and the picturesque all combine in it to achieve a strong, masculine and 'real' expression. Such 'reality' is to be equated in England with the philosophy of the *Ecclesiologist* and Street and with the work of Butterfield. As an expression of technique and social purpose it represents in wood an application of the principles of Philip Webb and William Morris as exhibited in brick in their Red House of 1859. The old cry, then, against the so-called 'eclecticism' of the mid-century is not strictly true, and the stick style of 1840–76 was an inventive and coherent method of achieving expression with indigenous techniques for an especially American building programme. Such writers as Eugene Clarence Gardner of Springfield, whose own work was pure stick style, stated their case very clearly. They themselves never used the word 'style.' Gardner, in his books, *Home and How to Make Them*, 1874, and *Illustrated Homes . . . Real Houses and Real People*, Boston, 1875, was concerned with the country and the suburb rather than with the city, produced multitudinously varied plan types for different family programmes, and in general developed in an even more clearcut manner the point of view initiated by Downing.

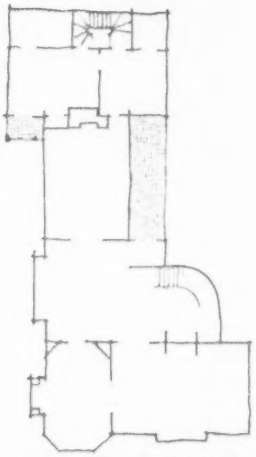
Beginning roughly in 1876 the wooden domestic style underwent a profound change, amplified its expressive means, developed a new kind of space, created a new order and eventually lost momentum in the East and subsided into semi-academicism by the late 'eighties. This phase from the mid-'seventies on was carried by architects rather than by pattern books and was disseminated by architectural periodicals, of which the most important was the *American Architect and Building News*, founded in 1876. The social *milieu* of this phase was still suburban, with one aspect of suburbia, the summer resort, becoming more and more important. The programme was still the single-family house, with the 'casino' or clubhouse as social centre of suburb and resort. However, by this time the suburb and the summer resort were apparently turning snobbish, and though the suburb may be said still to have been functioning as a creative social organism in the early 'eighties, the high point of this phase, it tended to function less well by the later 'eighties. Consequently, the eventual collapse of original invention in the East may be partially explained by the rise of an at once more pretentious and more conformist attitude in the social *milieu* which had supported the integrally democratic and individualistic architectural development throughout the mid-century.

In 1874, Henry Hobson Richardson, assisted by the young designer Stanford White, built the Watts Sherman House at Newport, Rhode Island, the hub of suburban summer resort activity, 5 and 6. Richardson here continued his experiments in the creation of a new kind of interior space which he had been carrying on since his Richard Codman project of 1869–71. In these he was clearly influenced by the English late medieval and early Renaissance living halls which were published by Robert Kerr in *The English Gentleman's House*, London, 1864. More particularly, however, Richardson was moved by the living halls used by Norman Shaw in his 'Old English' manor houses of the late 'sixties and early 'seventies. The publication of the tile-hung Leyes Wood by Shaw in the *Building News* of 1872 coincides with Richardson's first use of shingles as surface covering, in his F. W. Andrews House, at Newport, also of that year. In the Watts Sherman House, following closely upon the photo-lithographic reproduction of Shaw's seductive pen and ink rendering of Hopedene, Surrey, in 1874, Richardson built his closest adaptation of a Shavian manor house.



Watts Sherman House, Newport, 1874-75, by Henry Hobson Richardson, see 5, p. 173.

This antiquarian influence, sometimes called in America 'Queen Anne,' was supplemented from the first by another, that of the American 'Colonial.' Resort developments in eighteenth-century towns, a depression and a general feeling of the overcomplication of modern life had driven both architects and the public, by 1874, into a growing enthusiasm for the picturesque wrecks of seventeenth and early eighteenth-century houses, often shingled, which were in various states of pleasing decay in the Colonial centres most visited—Newport, Portsmouth, Newburyport, and so on. In 1872, Charles Follen McKim, a young architect, educated at Harvard, the Beaux-Arts and in Richardson's office, added a purposefully Colonial room to the eighteenth-century Robinson House on Washington Street in Newport, 7. Here two characteristics which the Queen Anne also possessed are apparent: a large fireplace and a lower ceiling height, emphasizing horizontality rather than verticality. In 1876, at the enormously influential Centennial Exposition at Philadelphia, the majority of the wooden buildings were of the fully developed stick style, but the most heavily attended architectural attractions were the half-timbered British buildings, by Thomas Harris, and the 'New England kitchen of 1776,' set up at full scale and stocked with Colonial housewives in complete regalia. Colonial and Queen Anne influences now began to merge, and when McKim remodelled the Dennis House in Newport in 1876 he created what amounted to a Queen Anne living hall, 8. Taking the stairs from their position near the front door, he added them to the old kitchen in the rear, increased the size of the fireplace and extended the room by means of a bay window. All the elements are brought together: Colonial enthusiasm, a few semi-eighteenth-century details, fireplace, stairs and window wall. The space is inventive; the antiquarian preoccupations might be considered full of future dangers.



Stoughton House, Cambridge, Massachusetts, 1882-83, by Henry Hobson Richardson, see 9, p. 174.

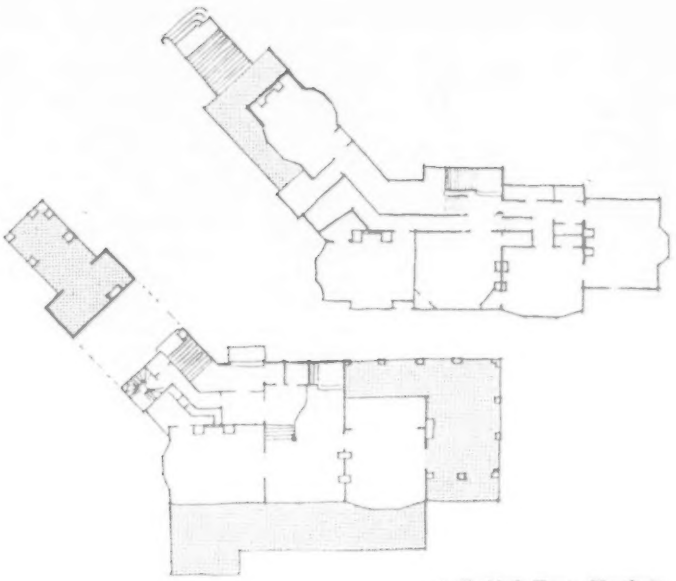
Thus, the new phase of the domestic development rested upon rather shaky and certainly antiquarian foundations. The element of escape, hardly a real factor in the mid-century, also became a cottage-style component. Yet the sense of experiment was still dominant, and by 1880, when renewed prosperity again made a good deal of building possible, American architects had generally assimilated the new influences and created from them what may be called an original 'shingle style.' Best known, almost solely known, of these houses of the early 'eighties are those designed by Richardson. The Stoughton House of 1882 has been published innumerable times, with its living-hall plan, its rough shingle surfaces enclosing its interior volumes and its banks of windows, 9. So commonly has this period been associated with Richardson's work that Hitchcock coined the phrase, 'Suburban Richardsonian,' to describe the general run of shingled houses. However, this phrase is misleading, as Professor Hitchcock would now be the first to admit. Richardson contributed to this architecture that same largeness of simpler and fewer shapes which was his gift as well

to the other architectural programmes with which he worked. But other architects played a greater part than Richardson in formulating and developing the shingle style, and other architects indeed carried it much further than did Richardson along those lines of spatial invention which led toward the work of Wright.

William Ralph Emerson of Boston, for instance—only distantly related to Ralph Waldo Emerson—appears to have been the first architect to dispense with the Queen Anne practice of shingling only the upper storeys. In his house of 1879 at Mt. Desert, an island summer resort off the coast of Maine, he extends the shingles over the whole surface, brings his windows to the corner with a small overhang, and thus expresses the wall as a thin and continuous shingled skin over profoundly plastic interior volumes, 10. The living hall is raised a quarter flight from the entrance level and opens above through a wide staircase well. From the hall one may look back down into the living room through a large aperture or may move outside under the shelter of a porch to an open pavilion. Space is freed in this design, within the limits of an enclosing shell which the architect organizes loosely and penetrates with deep voids. The debt to Shaw is clear, with the window seat, the sketchy half-timber and the Shavian chimney, but an essentially stud-frame lightness and flexibility are also apparent, and the house represents to all intents and purposes a complete Americanization of Shaw. Emerson's method in this kind of design is extremely interesting, since it is at once picturesque and personal, difficult to develop in large office practice. It is a painterly method whereby all areas and intersections are studied in richly pictorial little sketches, and the house grows and changes constantly in both space and massing. The sketches by E. Eldon Deane, renderer for *The American Architect and Building News*, illustrating another of Emerson's houses, the Loring House, can demonstrate not only the contemporary method of seeing but also Emerson's design approach as described by his pupils. These sketches break through the convention of plan and elevation as well as the tyranny of the formal perspective, and in consequence they allow a real freedom of formal invention as well as an intense feeling for the sensuous qualities of shingles, glass and rough stone. Their power lies in plastic invention, most weak today, but their own weakness is a tendency toward the quaint, the inadequately organized and the purely pictorial. At any rate, this picturesque method was one which required study and the total commitment of one man's sensitivity and intelligence. It possessed freedom; if it could acquire its own geometric discipline it could become a really flexible tool for architectural invention. Best of all, Emerson's design, like that of the other architects of this period, was peculiarly spatial in its basic sensitivities and as such was capable of continued architectural growth. Its sense of space generally saved it from quaintness and from the finicky fanfaronade of a purely 'cottage' style. In a real sense, spatial control was the architectural discipline into which this design proved itself capable of growing.

Loring House at Manchester-by-the-Sea, Massachusetts, by William Ralph Emerson.

With this building technique, this sense of space and this picturesque method free to their hands, the American architects of the early 'eighties embarked upon spatial experiments of several kinds. First was the space of volume, the large cave of space. This can be seen in the G. N. Black House (called Kragsyde!) at Manchester-by-the-Sea, Massachusetts, another summer resort,11. The Black House was built by the firm of Robert Swain Peabody and John Goddard Stearns, of Boston.



G. N. Black House, Manchester-by-the-Sea, Mass., 1882-83, by Peabody and Stearns, see 11, p. 174.

Peabody had been one of the most enthusiastic early admirers of Colonial architecture, and his two articles on the 'Georgian Homes of New England' had appeared in the *American Architect and Building News* in 1877 and 1878. From such a Colonial example as the Fairbanks House at Dedham, Massachusetts, of which he was very fond, and which was reproduced photographically in the *American Architect and Building News*, in 1881, 12, Peabody had acquired a feeling for the modelling of spaces through the sculptural planes of the gambrel roof, common in late seventeenth and early eighteenth-century Colonial work in New England. To this he added a feeling, certainly Richardsonian in its origin, for large and simple geometries in rough materials.

Spatially even more interesting is 'Shingleside,' a house built in 1880–81 at Swampscott, Massachusetts, by the Boston architect Arthur Little, 13 and 14. This was published in England in the *Architect and Building News* in 1881. Here one enters at the middle level, walks across an open gallery, goes either to the living room, from which an open balcony projects into the space of the hall, or else descends through the open space to the floor of the hall itself, lighted by a two-storeyed wall of glass on the ocean side. Off this again a low inglenook around the fire offers spatial relief. The enclosed volume, utterly open within its containing skin, is to be compared here with Le Corbusier's 'Citrohan' houses of the early 'twenties, which also make use of enclosed volumes, two storeys high, with projecting balconies and a wall of glass. Le Corbusier was probably influenced by Adolf Loos in his destruction of interior floor divisions, and, since Loos spent several years in America in the late 'eighties, one may at least be allowed the tentative observation that the line of development between houses such as 'Shingleside' of 1880–81 and Le Corbusier's work of the 'twenties may be more direct than is usually supposed.

The American architects of the early 'eighties, however, were not content merely with space as volume, however open within its shell. They apparently desired two other things as well, that is, interpenetration of spaces, both interior and exterior, and, most of all, a sense of continuity in that interpenetration. Such objectives can be seen in the work of John Calvin Stevens, of Portland, Maine, who in the mid-eighties took as his partner Albert Winslow Cobb, one of Emerson's pupils. Together Stevens and Cobb produced a book of domestic designs, *Examples of American Domestic Architecture*, New York, 1889. In this they extolled Emerson

[*continued on page 177*

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1, Richard Upjohn's King House, Newport, Rhode Island, 1845, typical of the massive Italian villa introduced to America by Downing, and 2, his Kingscote, also at Newport, 1841, an example of the picturesque villa of the forties, with its restless outline and front line and its intricate plan. 3, an American cottage from Downing's Cottage Residences, *built with a timber frame and vertical battens—a skeletal, articulated expression. 4, Dudley Newton's J. Cram (now Sturtevant) House, Middletown, Rhode Island, 1872. This is an extremely characteristic example of its moment. Picturesque asymmetry has given freedom to its plan, although each room is still a separate volume of space, organized around a hall which is purely circulation area. The entrance to the house disappears in a fold of the building and is shadowed by a deep porch. The demands of utility have brought the kitchen much closer to the dining room than it would have been in a contemporary English house of this size, and the whole compact though freely growing organism is enclosed by high, thin wooden walls and sharply differentiated planes of roof. Vertical sliding has given way to clapboards, but the windows are still voids set not only between vertical stripping which indicates the studs of the frame but also between horizontal stripping expressive of the plates. The actual trusses of the gabled roofs are expressed upon the exterior and cast further shadows upon the already skeletonized wall, and a sensitivity to the stick, both as vertical, horizontal and diagonal element, produces the skeletal pavilion of the veranda behind which high, narrow glass doors are set between the structural members. Stripped wall areas then play back and forth in a space defined by the encircling volume of the porch, and the sharp action of void and shadow is enhanced by the bold, wooden dusky red which the house is painted. 5 and 6. H. H. Richardson's Watts-Sherman House, Newport, 1874. The spatial core of the design is formed by the large hall which opens up the interior volumes of the house. This hall becomes both circulation and living area. A wall of glass opens to a terrace, while deep in the shadow of the hall a large fireplace mass operates as a spatial pivot. Opposite the fireplace a stairway of many turns opens up the space vertically, and all the elements are present for a new treatment of interior space as one large volume capable of plastic articulation. Above the stone ground floor shingles mould the exterior of the house and become an enclosing skin which both flows around corners and manipulates light in a picturesque manner. This shingled skin destroys the skeletonized expression of the mid-century and creates a sense of the continuous enclosure of interior volumes. Windows are grouped into horizontal bands, differentiated by panel from the shingle surface of the rest of the wall and enhancing again the expression of continuity of interior space. The vertical stud expression of the mid-century is reduced, and the design emphasis is upon this continuity of horizontals. The forerunner of this design is clearly seen in 12 on the next page. The Colonial Revival is first heralded in this room inside the eighteenth-century Robinson House in Washington Street, Newport. 7. Its date is 1872; its architect young Charles Follen McKim. 8, an inventive spatial synthesis of Neo-Colonial and Neo-Queen Anne in McKim's living hall in the Dennis House at Newport, 1876.*

9, *Richardson's famous Stoughton House at Cambridge, Mass., of* 1882–83—*almost the only widely known example of a style which had hitherto been connected with Richardson exclusively, but which now turns out to be the widespread Eastern States style of the late seventies and eighties.* 10, *William Ralph Emerson's House at Mount Desert, Maine,* 1879. *The walls are completely shingled, the windows, chimneys and so on clearly derived from Norman Shaw.* 11, *R. S. Peabody and J. G. Stearns' Kragsyde, Manchester-by-the-Sea, Mass.,* 1882–83. *This remarkable house contains its interior volumes within a sharp gambrel from which the space really bulges, and then spans the entrance drive with a sweeping Richardsonian arch. Inside the darkly stained shingle shell of enclosing wall the levels move freely. Entering under the arch one follows a tortuous way which emerges finally into a hall which is open vertically for two and a half storeys. At a half level above, and visible from below, a gallery moves across the rear of the house toward the bedroom suite over the entrance archway. The house is then penetrated by spatial movement at several levels, and in the plans one can see clearly how the planes of the floor levels move across each other in an interior volume which is conceived of as a whole, without rigid horizontal boundaries between floors.* 12, *the Fairbanks House at Dedham, Mass., a genuine Colonial house, published in* The American Architect *in* 1881. *This is the sort of house on which designs like the Watts-Sherman House,* 5, *depended.* 13 *and* 14, *A. Little's House at Swampscott, Mass.,* 1880–81, *of an almost Corbusier-like openness of interior space. This was published in England in the* Architect and Building News, 1881, *perhaps the first good American house to be so presented.* 15, *J. C. Stevens and A. W. Cobb's James Hopkins Smith House at Falmouth Foreside, near Portland, Maine,* 1884–85, *typical of the interpenetration of outer and inner spaces which Frank Lloyd Wright was going to take up ten years later and develop with a twentieth century form.* 16, *J. C. Stevens' project for a Country House,* c. 1885. *Here the dominant feature is spatial penetration extended into a long horizontal continuity.* 17, *Wilson Eyre, Ashurst House, Overbrook, Penn.,* 1884–85. *Note the veranda and the way in which it merges into the body of the house. Here again Wright could find confirmations of his intentions.* 18, 19 *and* 20, *two houses by Bruce Price at Tuxedo Park, New York,* c. 1885–87. *In the William Kent house, Price crosses two axes decisively and sets the two closely knit volumes upon a stone terrace which the upper storey of the house partially covers. Closed and open forms are precisely differentiated but interwoven. The cross volumes are enclosed by shingles, but the flat plane of gable fronting the terrace is actually made to read in a more*

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decisively planar fashion by the abstracted half-timber work across its face. The problem of the living hall in a small house is partially solved by reducing the hall in size and turning it into a reception centre while the main living hall function is taken over by the living room. The space is articulated around a central fireplace mass and stairway, a plan similar to some of Wright's early spatial solutions, as for instance in the Ward Willitts House of 1902. *Price's Chandler House on the other hand is in its gabled elevation remarkably close to Wright's own house of* 1889 *at Oak Park.* 21, *the Library in Richardson's Watts-Sherman House. This was done in* 1879 *and with its slightly precious detail is the work of Stanford White.* 22, 23 *and page* 168, *the Casino at Newport,* 1879–81, *by McKim, Mead and White, an eminently suburban, holiday kind of design. Shingled exterior, much lattice work in the generous verandas. The effect is one of ingenious interweaving of structural as well as spatial elements.* 24, *a dining room added by Stanford White to Upjohn's Kingscote in* 1880. *Here, as in the Newport Casino, is an interwoven organization of articulated elements in which the space is created not by planes so much as by a basketry which weaves the pattern of an area. The moulding which continues all the way around the room just above head height insists upon the scale and turns the planes of wall and window into panels which give the impression of movability. Spaces then weave through each other; voids are not holes in a solid but real penetration through the linear elements which create them.* 25, *McKim, Mead and White's Cyrus McCormick House, Richfield Springs, NY,* 1881–82, *showing deep spatial punctuation of a low shingled block, and* 26, *the hall in the Tilton House, Newport,* 1882–83, *by the same architects. The interweaving of spaces can be compared with Wright's D. D. Martin House at Buffalo of* 1904, 27.

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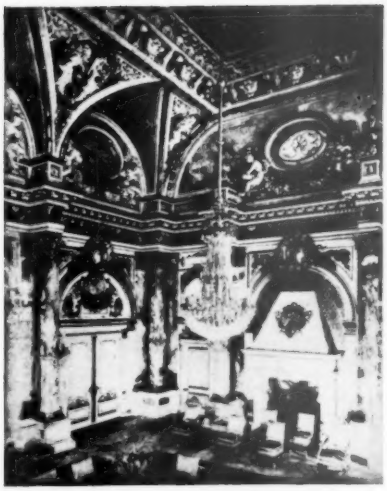

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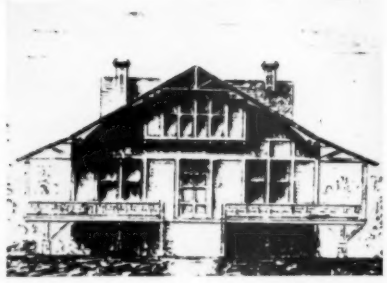

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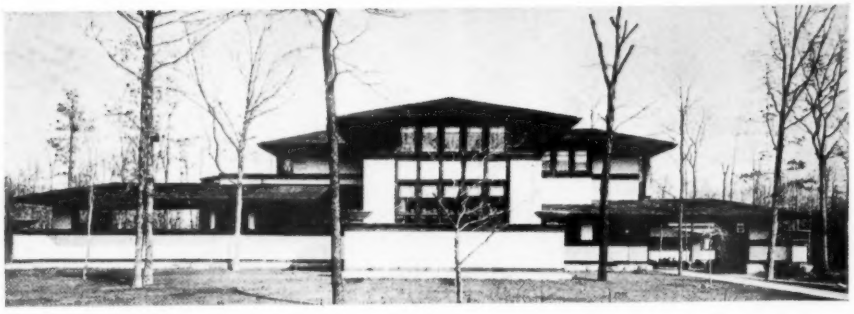

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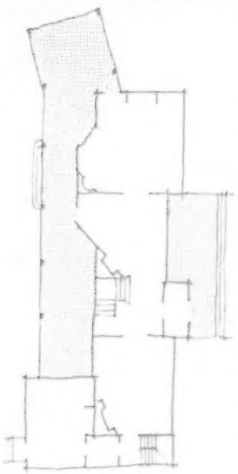
The contrast between the happy, slightly precious end of the suburban tradition of the seventies and eighties and the pompous niceties is equally clear in the living room of McKim, Mead and White's Tilton House, Newport, of 1882–83, 28, *and R. M. Hunt's 'Breakers' of* 1892–95, 30, *and in Sargent's Daughters of Edward Boit of* 1883, 29, *and Daughters of Asher Wertheimer of* 1901, 31. *Beyond this point the decay of the tradition begins to affect the exterior of the house as well. The pomposity and the palatial pretensions of eastern clients are reflected in the 'Georgian' revival treatment of the H. A. C. Taylor house,* 32, *McKim, Mead and White's first essay in the manner* (1885–6) *and in the white painted walls which marked, with equal certainty, the decay of the feeling for materials which had been the strength of the style. But Wright, in the Middle West, inhabited a society and a climate of thought very like that in which the suburban romantic tradition had been founded, and in the Ward Willitts House,* 34, *was able to take up and raise to new levels the possibilities which had been latent in the stick-style projects of the middle seventies, of which* 33, *by E. C. Gardner, can stand as example.*

and continued as well that preoccupation with the importance of domestic architecture as a cultural programme which Downing had initiated in the 'forties and which E. C. Gardner had carried on in the early 'seventies. Stevens's James Hopkins Smith House, at Falmouth Foreside, near Portland, Maine, dating from 1884–85, can illustrate the development of spatial interpenetration, 15. The house is a gambrel-roofed volume intersected by the void of a deep terrace veranda. The roof of the upper storeys folds over the lower void so that one can feel them pass through each other, and the penetration becomes actual below by the ranges of glass doors which open from living room to terrace. It will be perceived that the Colonial-inspired gambrel is not an antiquarian domination of the design, but is a plastic shape at the service of a spatial intent, with window and intersection detailing which is original and not eclectic. Rough stone, big arches, heavy piers and weathering shingle walls are also evidence of a builder's sensitivity to materials—a vernacular sensitivity, stoutly developed and totally at the service of the architect, not in competition with his intent.

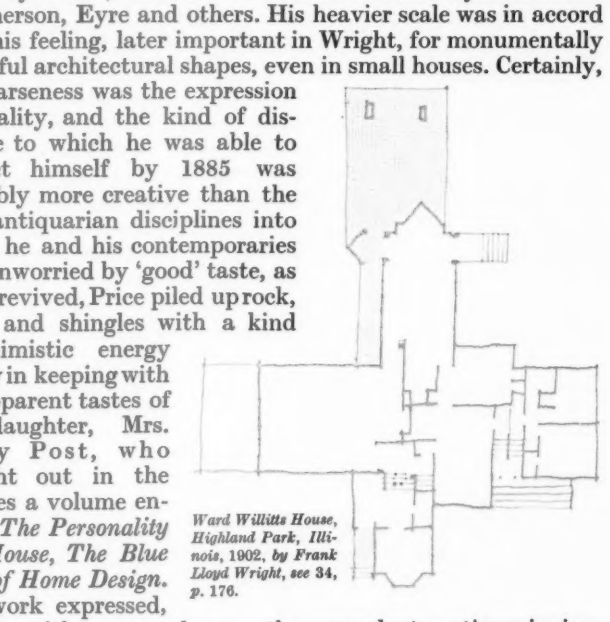
James Hopkins Smith House, Falmouth Foreside, Portland, Maine, 1884-85, by John Calvin Stevens, see 13, *p.* 174.

The desire to extend such spatial penetration into a long horizontal continuity can be observed in a sketch for a country house, by Stevens, dating from about 1885, 16. Here the long axis of the house stretches away across the site and is extended by its integral veranda. The voids and solids of the house all move plastically within a dominant horizontal sweep.

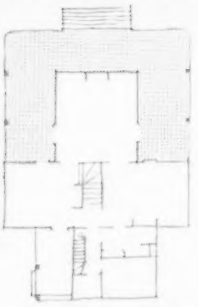


Potter House, Chestnut Hill, Pennsylvania, 1881-82, by Wilson Eyre.

Continuity in spatial organization was the dominant discipline which the shingle style imposed upon itself by 1885.[4] It was a discipline generated from within rather than from without the architectural envelope—a kind of classic phase in this design where coherence arrived by means which were integral to its own nature and not imposed upon it by an academic canon. The houses of Wilson Eyre, of Philadelphia, can show this most clearly. The plan of his Potter House, at Chestnut Hill, Pennsylvania, of 1881–82, one of the many houses he built in the Maine Line suburbs of Philadelphia, develops a long axis within which the room spaces are organized as one volume. Short interior diagonals vitalize the space, but the discipline of single extension, continued by the veranda, organizes the whole. All rooms are lighted from opposite sides, with one set of windows being shaded by the porch ceiling. The stairs are set back behind the fireplace, as if consciously being got out of the way so as not to disturb with their vertical movement the horizontal continuity of the ceiling planes. This is even more apparent in Eyre's Ashurst House, at Overbrook, Pennsylvania, of 1884–85, 17, where the stairs are heavily masked by newels and where one's diagonal movement upward is interrupted and partially screened. Wright's staircases are later screened and broken in this way. Horizontal continuity thus ensured, the rooms stretch out along the ground plane, widely open to each other and, indeed, part of the same continuous space. The veranda again extends the interior space and actually penetrates the house, as can be observed in the photograph of the exterior. Spaces pass through each other, and their continuity is emphasized by the long range of windows which pass around the corner of the house, although the total continuity of plane above plane, as Wright would later develop it, 34, is still incomplete here because of the gabled volume above the second floor. The scale is brought down in order to intensify one's experience of the horizontal extension, and the balcony over the entrance is very low overhead. To enter under it and to take the few steps down into the hall is to be seized by the impress of the space and forced thereby to experience its long, sheltering continuities. Wright later was to develop extensively exactly this device of forcing the scale.



Ashurst House, Overbrook, Pennsylvania, 1884-85, by Wilson Eyre, see 17, *p.* 174.



William Kent House, Tuxedo Park, New York, 1885-86, by Bruce Price see 18, *p.* 174.

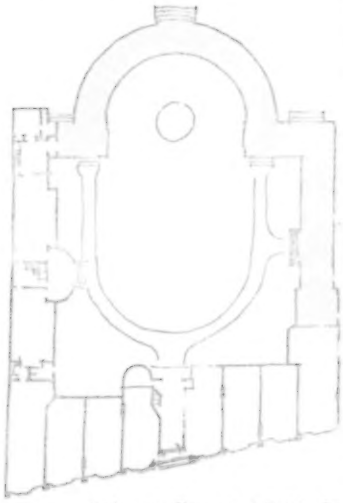
By 1885 the principle of the interpenetration of volumes and of clarity in their organization was well established, and Bruce Price of New York extended this principle to the design of very small houses, as demonstrated in his small 'Honeymoon Cottages' at the new suburban development of Tuxedo Park, New York, founded in 1885 by Pierre Lorillard. Price's design was generally coarse, in contrast to the more delicately scaled work of Emerson, Eyre and others. His heavier scale was in accord with his feeling, later important in Wright, for monumentally powerful architectural shapes, even in small houses. Certainly, his coarseness was the expression of vitality, and the kind of discipline to which he was able to subject himself by 1885 was probably more creative than the later antiquarian disciplines into which he and his contemporaries fell. Unworried by 'good' taste, as yet unrevived, Price piled up rock, studs and shingles with a kind of animistic energy hardly in keeping with the apparent tastes of his daughter, Mrs. Emily Post, who brought out in the 'thirties a volume entitled *The Personality of a House, The Blue Book of Home Design.* This work expressed, though with some charm, the prevalent antiquarianism and desire for conformity which was typical of that epoch in American domestic architecture. Price's William Kent House of 1885–86, 18, is remarkable in its plan, too. The crossing of the two axes is very similar to that in some early Wright houses, for instance the Ward Willitts House of 1902, 34. Wright may well have known the Kent House, since it was published in George William Sheldon's *Artistic Country Seats*, 2 vols., New York, 1886–87. This book was probably owned by John Lyman Silsbee, as by almost all other eastern domestic architects, and was possibly in his office in Chicago when Wright worked there in 1887. Wright may have owned it himself, since he certainly seems to have used material

Ward Willitts House, Highland Park, Illinois, 1902, by Frank Lloyd Wright, see 34, *p.* 176.

[4] Such continuity and discipline were noted by Pickens among buildings in Detroit during this period. See B. L. Pickens, 'Treasure Hunting at Detroit,' *Architectural Review*, XCVI, 1944, pp. 169.

from it in his own early experiments. Such seems clear in this case, where the Willitts house develops a crossed-axial discipline along lines already indicated by Price. Moreover, Wright's own first house, built for himself in Oak Park, in 1889, 20, while he was working for Louis Sullivan, shows a very close elevational similarity to Bruce Price's Kent House. It is even closer in its exterior organization to Price's Chandler Cottage at Tuxedo, dating from 1885-86, and published in 1886[5], 19. The designs were therefore available to Wright, who clearly adopted them for his own house. The similarity of projecting gable over bay windows and of bands of windows in the gable, surmounted by a semi-Palladian arched motif are striking. It is from this basis and at this time that Wright begins his own experiments and embarks upon the well-known if inadequately understood course of his own growth.

However, Wright begins from a richer synthesis of the tradition of American building than has as yet been indicated here, for in the early 'eighties by far the most advanced and distinguished work in domestic design was being done by the young firm of McKim, Mead and White. When this firm became perhaps too big and too successful in the mid-'eighties—when it became preoccupied at once with the correct, the grandiose and, because of its compartmentalized and profitable activity, with that which would be easy to produce or reproduce—from that moment dates the beginning of real eclecticism in the east and the collapse of the development in domestic architecture which has been traced so far. Yet in the early 'eighties the work of McKim, Mead and White was of supreme diversity and quality. Much of this early quality must be assigned to the design sensitivity of the young Stanford White. The library of the Watts Sherman House, 21, finally decorated by him in 1879, shows a slightly 'aesthetic' preciousness, a little like that of Godwin. But beyond this the room has delicacy of scale and precision of material and detail. The green woodwork is organized rhythmically into panels picked out with gold paint in a detailing which is at once semi-Colonial and semi-Oriental. Over the doorways as well appear plant tendrils against a sunburst ground which exhibit the typical whip lash curve of Art Nouveau.



Casino at Newport, 1879-81, by McKim, Mead and White, see 22 *and* 23, *p.* 175, *and p.* 168.

When Charles Follen McKim, William Rutherford Mead and Stanford White organized as a firm in 1879, one of their first commissions was the Casino at Newport, Rhode Island, a large complex of restaurant, tennis courts, a theatre and shops, the social centre for the summer community, 22, 23 and p. 168. This building combines both discipline and plastic invention. The façade is symmetrical, although rich in the play of solid and of void. Plastic shingled volumes, with dark brown, painterly surfaces, are poised above smooth brick piers. The delicate scale, the play of light, the colour of the flapping awnings are all important elements in this eminently suburban, resort and holiday kind of design. The curving piazzas of the courtyard represent a strong synthesis of the pavilion space created by wood frame elements which, as we have seen, had been so much a part of the whole American porch sensitivity since the mid-century. Spindle and lattice screens, carefully differentiated in scale from the structural posts, plates and braces, form patterns of light and shade and play changes upon the sense of enclosure and exposure. Japanese influence, strong also after the Philadelphia Centennial of 1876, can be detected as well in this play of skeleton and screen, especially in the long thin rectangular area under the plate which the 'eighties called an 'open-work fascia' and assigned to the Japanese. Something of the Japanese also plays a part in the interweaving not only of structural but of spatial areas which the firm, probably largely through the sensitivity of White, was able to produce at this period. McKim and White experimented in this direction in the Victor Newcomb House, Elberon, New Jersey, 1880–81, but their most successful attempt occurred in the dining-room which White added in the same year to Upjohn's 'Kingscote' of 1841, 24. This distinguished room is an interwoven organization of articulated elements in which the space is created not by planes so much as by a basketry which weaves the pattern of an area.

As this weaving of spatial elements takes place, so also McKim, Mead and White create the impression of a real weaving together of the fabric of the house as a whole. Their Cyrus McCormick House of 1881–82, at Richfield Springs, New York, presents the volume of a roughly textured gable-shape. The gable is then penetrated deeply by a porch which cuts in under the volume and sweeps voluminously around the corner into a large pavilion, 25. The vertical posts of the porch are scaled to a semi-bamboo section; some appear to penetrate the plates below them, and the whole architectural expression becomes that of an organized basketry. Solid and void interpenetrate, and spatial volumes pass through each other in a more ample and assured manner than in the work of either Stevens or Eyre.

Such creation of space through the interweaving of structural elements and of light values should be noted especially in the hall of McKim, Mead and White's Tilton House of 1882–83, 26, where it calls for comparison with, say, the living room of Wright's Martin House, Buffalo, 1904, 27. Wright intensifies, extends and clarifies the basically similar experience. He also interweaves spatial areas, and this interweaving eventually extends itself to his whole design, as it was also an important element in Sullivan's skyscraper organization. Wright's advance perhaps over the Tilton hall is one of greater discipline, clearer geometry and a more total order which eliminates the adventitious, however pleasant in itself, such as the light-splintering spindle work screen of the Tilton house. The sensitivities of the shingle style to form, as seen here in the work of White, are parallel to those of the Impressionist painters; Wright's to those of Seurat and Cezanne. Wright's scale is more intense, the feeling of a strictly architectural fabric in operation more insistent. By contrast, one aspect of Wright's genius should be clear, and that is the power to organize totally—sometimes implacably—the ability to study the elements of design in their basic aspects. With Wright, precise geometries organize a peculiarly biological experience. The virtuosity with light and space with which he has done so much is partially an inheritance from his tradition.

The power of that American suburban tradition to make works of art in the early 'eighties is revealed in the living room of the Tilton House, 28, as in an early painting by John Singer Sargent, such as *The Daughters of Edward Boit*, painted in 1883, 29. In both a slightly precious, very delicate feeling for the shapes and textures of objects is organized by a creation of space which has clarity, definition, and a sense of the real tension between things. In both, too, a kind of proto Art Nouveau delicacy of scale is very apparent, as is also the atmosphere of suburban ease and satisfaction, of an adequately rich life without too much necessity for pretension.

For a variety of reasons, much of this tended to disappear in the arts of the east after 1890, and the interior of the dining room in the 'Breakers,' by Richard Morris Hunt, 1892–95, 30, as well as *The Daughters of Asher Wertheimer* by Sargent,

[5] *Building, A Journal of Architecture*, V. No. 12. September 18, 1886.

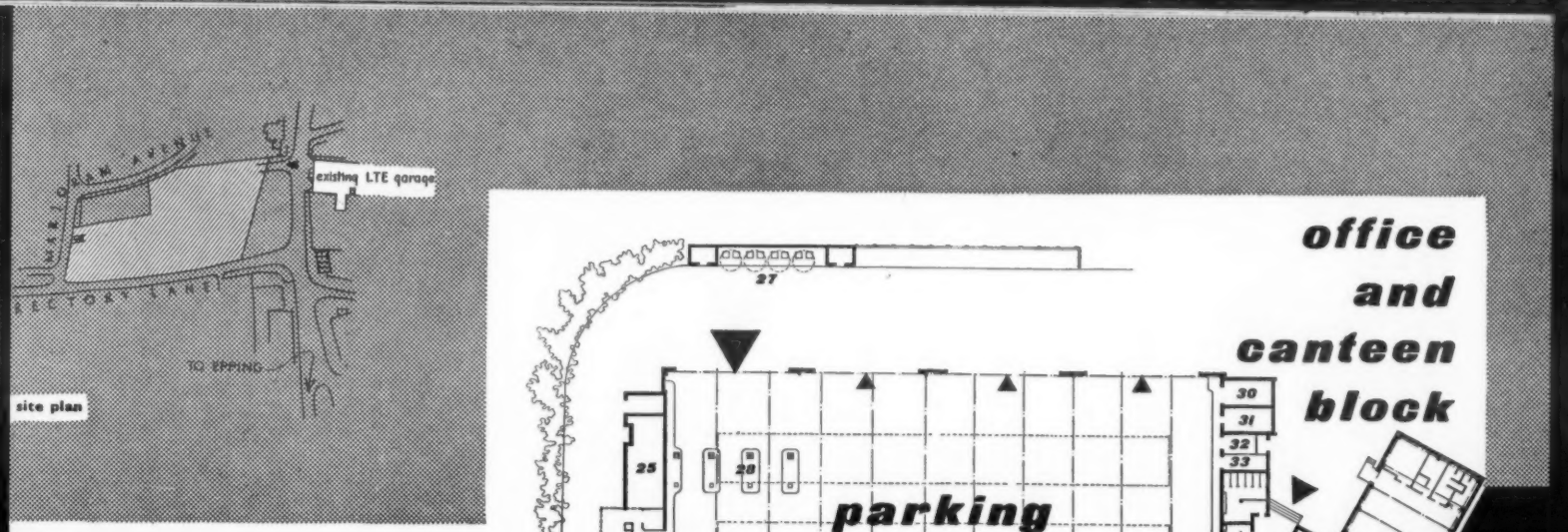
31, painted in 1901, can possibly show why. A rather obvious grandeur has overwhelmed life in both, and in both the sense of real space is drowned by a windy expansion of grandiose forms. Sargent is now slick, fashionable and cynical rather than spatial. Hunt is pillowy, sickly rich and flatulent. The suburb has turned palatial, and rather snobbish and has thereby lost the general cultural creativity which it had previously possessed. Although the situation is complicated, a further observation might be made concerning the feminization of taste and the resultant rise of interior decoration. Certainly at this time the American suburb began to adapt the forms of older and grander civilizations without being able to absorb them. Plastic invention and spatial sensitivity, evidences of cultural health, temporarily succumbed to representational and apparently artificial pretences. Thus, although the shingled style continued in one form or another in the east for some twenty years longer, it no longer represented the main stream of architectural development.

In this movement McKim, Mead and White played their part, mainly as they continued their own success story as a firm. Creative design demands probably as many failures as successes, as Wright's work, for instance, most courageously shows. McKim, Mead and White produced some of these architectural aberrations in the early 'eighties, such as the Metcalfe House, Buffalo, 1883–84, where the plan was tortured, where nothing hung together, all materials oozed nastily into each other and everything went just a little out of scale. The necessity for a formula to safeguard against such failures was certainly felt by the firm—just as most architectural firms of the present day, operating upon a large professional scale, similarly attempt to stay as much as possible upon 'safe' ground. In the mid-'eighties Joseph Morrill Wells found for the firm its formula in the Renaissance and the pseudo-Classic and thus led the way for other American firms to follow into academicism. These factors, coupled with the growing domination of architectural education in America by the Beaux-Arts system, all resulted in the gradual decay of the indigenous tradition in the eastern United States. The vernacular became a quasi-eighteenth century semi-Palladianism of which the first and probably the best example was McKim, Mead and White's H. A. C. Taylor House, Newport, of 1885–86, 32. In these designs space eventually retreats again into separate rooms, the cube takes over once more, and the spatial invention of the nineteenth century enters into a lingering decline. The feeling for materials as design components also tends to disappear, as does, tragically, the native sensibility of the vernacular builder, and all surfaces become covered with that light—usually white—paint which has now become once again, as Downing claimed it to be, a dominant feature of the American landscape and a restricting factor in the sensitivity to architectural colour of two generations of Americans.

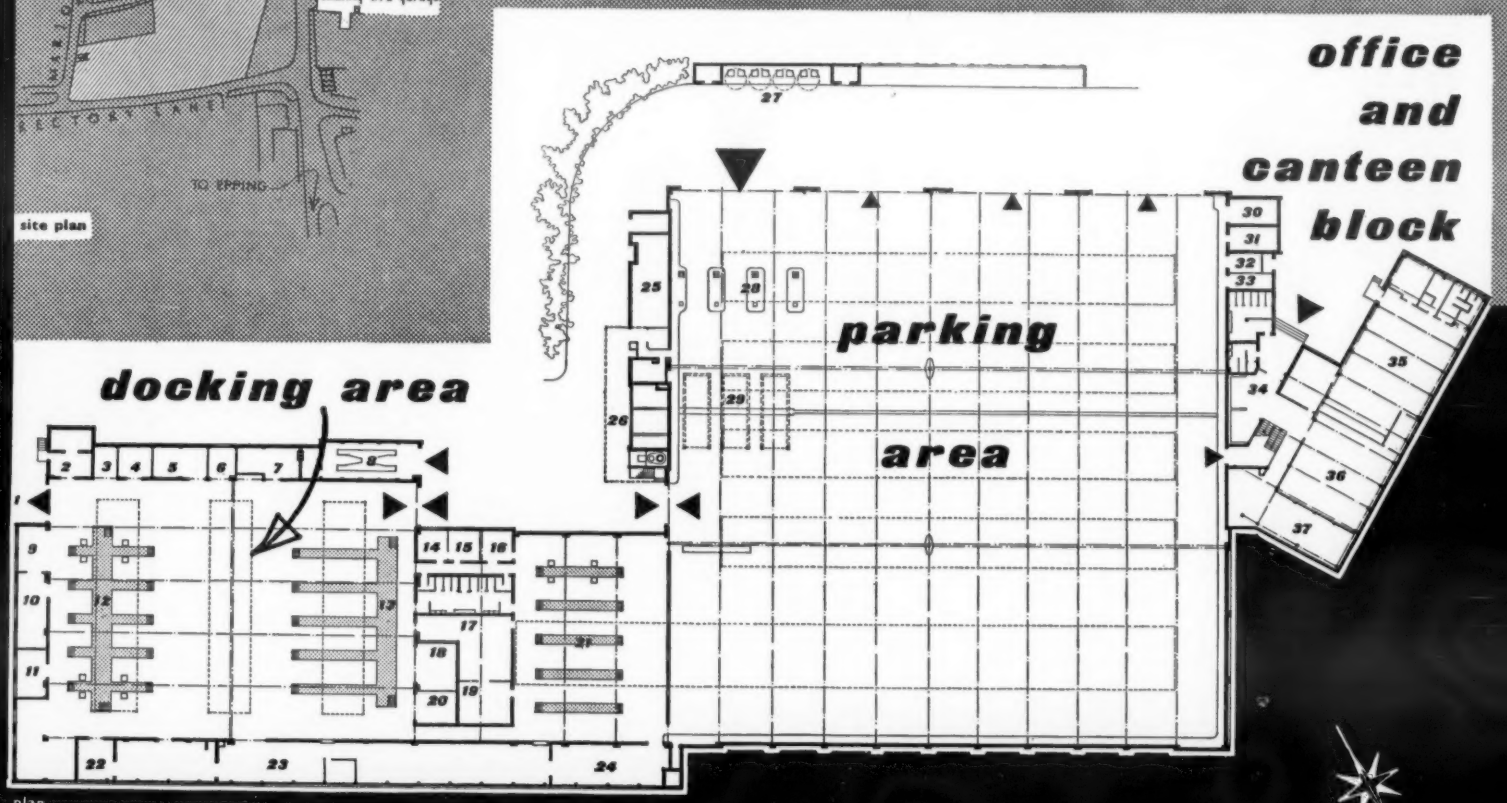
Some of the later work of McKim, Mead and White and others may have had qualities of its own. These qualities cannot be explored here, since they were the outcome of objectives and methods rather different from those which produced the architectural invention with which we have been concerned. Yet even the phase of reaction had its positive aspects, since in part it also grew out of that whole movement toward discipline, clarity and order which we noted in the creative work of Stevens, Eyre and Price as well. Clear planes of wall, now clapboarded or rendered in stucco instead of shingled, an insistence upon geometric discipline, all these might be positive design elements, however burlesqued and turned into formulae by the eclectics who used them in a representational fashion to imitate the Renaissance or the Colonial. Hitchcock, in his article 'Frank Lloyd Wright and the "Academic Tradition",' *Journal of the Warburg and Courtauld Institutes*, vol. 7, 1944, has pointed out how Wright absorbed from the academic reaction these positive elements, concerned mainly with discipline in design. Consequently, we need not labour the point here. It should be noted, however, that Wright was enabled to begin his work under social conditions which were exactly those we have seen as the support of the original nineteenth-century development as a whole. Oak Park, where he worked in the 'nineties, was at that time an idealistic suburb, suffused, like much of the rest of the Chicago area, with the agrarian radicalism which was the core in America of the Populist Party of that period. While the eastern suburbs were going conformist and antiquarian, Wright, dug into the last memory of the agrarian tradition in suburban Oak Park, was able to find clients who were capable of continuing to embrace the nineteenth-century tradition of invention and who would allow him to go on under the compulsion of his own vision. As he read his Ruskin, Owen Jones, Whitman and Viollet-le-Duc, and as he slowly grew in his search for that 'reality' which the men of the mid-nineteenth century had also sought, it was a suburban *milieu* whose aspirations at least were both democratic and agrarian which sheltered him. In it he evoked with epic power the experiments of those romantic realists who had preceded him, as the rich interweavings of his Ward Willitts House orchestrate, 34, for instance, not only Japanese influences but also such stick style projects as those of E. C. Gardner, 33. And from these early houses by Wright directly formative influences can be traced—through the Wasmuth publications of 1910 and 1911—upon *Die Stijl* designers and Gropius in the 'teens, and from them to the Bauhaus and Le Corbusier in the 'twenties.

Consequently, the tradition which threads its way from the agrarian dream of Jefferson to Broadacre City is one which burgeons in the American suburb of the nineteenth century and which is presented by it, as a kind of unforeseen gift, to the twentieth-century world. Its limitations and its strengths are part of the whole, and, if it fell into temporary decline, it at least envisages in Wright, and in those who now come after Wright, a social and architectural invention which may be more coherent but no less free.

GARAGE AT LOUGHTON

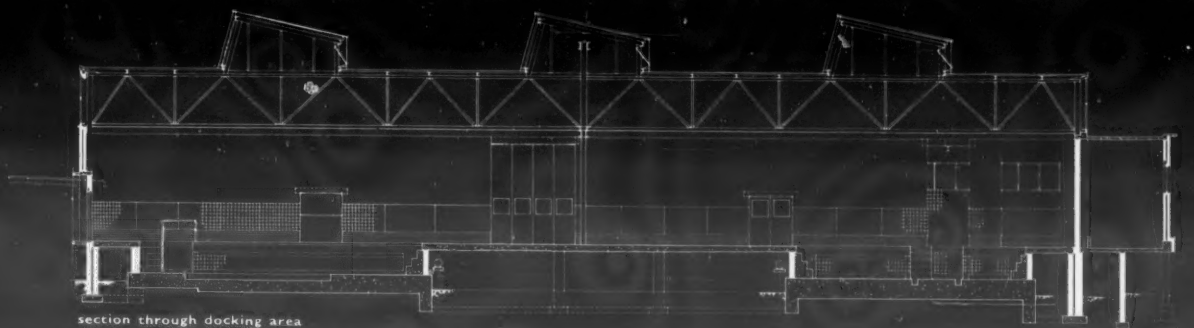


key
1, emergency exit.
2, sub-station.
3, salvage.
4, waste oil.
5, oil stove.
6, dock foreman.
7, smith.
8, steam cleaning.
9, electricians.
10, accumulators.
11, fuel pump.
12, major dock pits.
13, inter dock pits.
14, garage engineer.
15, clerk.
16, assistant foreman.
17, lockers.
18, coach maker.
19, drying.
20, painter.
21, rota pits.
22, unit clean.
23, stores.
24, tyre store.
25, machine room.
26, boiler house under.
27, fuel oil tanks.
28, fuelling bays.
29, bus washing machines.
30, night foreman.
31, first aid room.
32, blinds.
33, advertisements.
34, notice hall.
35, traffic office.
36, conductors.
37, lockers.



plan

scale: 1 64 in. = 1 ft.



section through docking area

scale: 1 24 in. = 1 ft.

inter-dock pits

major dock pits

BUS GARAGES FOR LONDON TRANSPORT

1 GARAGE AT LOUGHTON

F. R. S. YORKE, E. ROSENBERG AND C. S. MARDALL: ARCHITECTS

in association with Thomas Bilbow, architect to London Transport Executive. J. R. Penoyre: associate architect; J. S. P. Vulliamy: assistant architect.

1, view of the parking area from the rota pits.

The site, 93 per cent of which is covered by the building, is restricted and irregular in shape and falls 15 ft. from west to east. Access was permitted at one point only and the entire operational area has been kept at one finished level. To achieve this an entrance ramp leads down to the main parking area while the docking area has a suspended floor slab.

The garage is divided into three principal units:—

1, the office and canteen block containing the conductors' room and traffic office from which the operation of buses is controlled. Above are the canteen, kitchen, recreation room and a dining room for the administrative staff.

2, the parking area for 137 buses. Here the bus on entering one of the three servicing bays is refuelled, given lubricating oil, vacuum cleaned and automatically washed—within about four minutes. There are also five inspection pits for routine maintenance.

3, the docking area for major repairs containing ten inspection pits, each provided with special lighting and heating, vacuum cleaning points, a bus exhaust extract system, compressed air, waste oil drainage and, in two cases, hydraulic jacks. The area also includes ancillary stores, offices, and workshops, in addition to a high-pressure steam-cleaning booth.

The office and canteen block is of steel-frame construction with bays 37 ft. by 10 ft. Stanchions are encased in concrete and beams are concealed by suspended ceilings. Roof and floor slabs are of reinforced concrete, the roof insulation consisting of 1 in. cork. External panel walls are of 11 in. cavity brickwork. The parking and docking areas have roofs of welded steel trusses, on primary and secondary systems, with channel purlins and steel decking. Perimeter bands of vertical glazing 7 ft. high are carried by steelwork and there are portal frame monitor rooflights, with 6-in. concrete block cheeks. The whole steel structure is independent of the surounding brick walls and is free to move separately. The parking area floor slab is of reinforced concrete with hardened integral grano, laid on mass concrete fill (at places 5 ft. 0 in. deep). The docking area floor is of 8 in. reinforced concrete with 2 in. hardened grano, laid on permanent shuttering of asbestos sheets, carried on sleeper walls. The pits are on mass concrete foundations.

In the administration wing there are quarry tile floors in bus crew areas, kitchen and canteen ; elsewhere linoleum is used. Walls are generally tiled in crew areas to door height. In the recreation room wall finishes are in cork, fair-faced brickwork, painted plaster and hardwood slats. Ceilings, normally suspended, contain panels of acoustic board with glasswool quilting where rooms are liable to much noisy use. Parking and docking areas have fair-faced brick walls, painted: the dado in the parking area is rendered and painted in panels and in the docking area is tiled. The skirting in both areas is of blue Staffordshire bricks. All services are exposed and painted in appropriate B.S. colours. The pits are finished in fair-faced concrete painted with rubber-based paint and glazed tiles. For external finishes second hard stocks are used generally. The recessed wall beneath the north-east stores is in dark grey multi stocks and the south-east elevation has white tyrolean rendering. Eggshell glazed tiling in white and grey is used on the north-east elevation.

2

3

4

2, the main folding doors to the parking area: they are of timber, painted alternately dark and light battleship grey at each fold. 3, interior of the first floor of the office and canteen block: view from the recreation room, past the canteen dining room. 4, the staircase hall and notice room which links the parking area with the office and canteen block. Beyond the glazed screen is the conductors' room and traffic office. Walls are grey with yellow tiles below the notice cases, the floor has blue-black quarry tiles, the ceiling is blue and columns are burgundy-red. The staircase string is signal red and the soffit grey. 5, the south-east elevation with emergency exit from the docking area. The projecting block contains electricians' workshop and the accumulator charging room.

5

6
7

GARAGE AT LOUGHTON

6, the main entrance with the office and canteen block on the left. The window unit is continuous through the two floors, intermediate panels being faced with sheet aluminium painted grey and backed with insulating material. 7, night view from the entrance to the docking area looking past the boiler-house chimney to the main parking area. 8, the north-west façade of the office and canteen block from the garage entrance showing the publicity pylon also designed by the architects. 9, the communication trench of the inter-dock inspection pits.

8

9

2 GARAGE AT STOCKWELL

ADIE, BUTTON AND PARTNERS: ARCHITECTS

in association with Thomas Bilbow, architect to London Transport Executive.

10, the parking area looking toward the north wall.

11

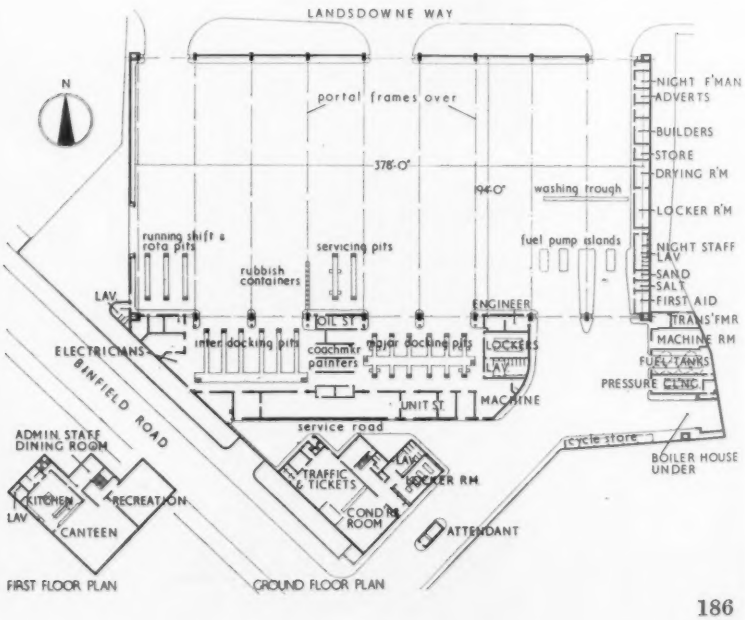
11, the main parking area looking north-east. The reinforced concrete vaults are cantilevered from the main arches permitting an unobstructed skylight 140 ft long. This is the largest construction of its type in England. 12, the bus entrance at the south-east corner of the parking area.

As the site is irregularly shaped the parking area had to be situated at the largest end—the north end—with the docking pits and repair shops planned on an east-west axis, to the south. Buses enter from Binfield Road by way of a private access road and refuelling and servicing are carried out at islands inside the entrance.

The main building is 392 ft. long, and is constructed of two-hinged reinforced-concrete portal frames spanning 194 ft. to give nine bays and an uninterrupted floor space of 73,350 sq. ft. The frames are carried on piled foundations, on which they bring a load of approximately 400 tons. The prescribed headroom throughout the garage was 16 ft. and this determined the location of the H beams at which level the main frames begin to spring. The reinforced concrete vaults, struck to a radius of 27 ft., are cantilevered from the main frames and contain a roof light 140 ft. by 14 ft. in each 42-ft. bay. Passing across the roof lights at 10-ft. centres are 6-in. wide reinforced concrete ribs designed to take care of unusual loads, like snow, and prevent torsion on the main ribs. The only longitudinal tie between the frames is the H beam which is carried round the four sides of the garage and conceals 9-in. cast-iron rain disposal pipes, 6-in. sprinkler main, compressed air and water ring mains and electrical conduits. The comparatively small section of the main frames made it essential to weld the main reinforcement (instead of the customary laps) and some 1,200 V-butt welds were made in the arch ribs and ties connecting the pile caps. Concrete was delivered by pump and vibrated with immersion vibrators. In the garage and docking area floors are of granolithic on reinforced concrete slabs. Around the parking area there is a 5 ft. 6 in. high rendered dado painted with a water-resisting paint. Lighting over the whole parking area is provided by continuous runs of unshaded 8-ft., 75-W fluorescent lamps following the arch of the main ribs, in runs of 22 lamps.

12

GARAGE AT STOCKWELL



The name of Olivetti has become almost synonymous with the patronage of good contemporary design—and over a wide range from the products themselves to the model factory and housing for the workers at Ivrea (AR, April and May, 1946) this Italian typewriter manufacturer has built up a design reputation which is the envy of all progressive businesses. Now the enthusiastic reception which the products have received in England since the war has necessitated a programme of sales and service centres which bring Olivetti patronage into English architecture.

5

TYPEWRITER SHOWROOMS

GORDON ANDREWS: DESIGNER

Berkeley Square The main showroom. The mail sorting area is concealed by the screen in the background.

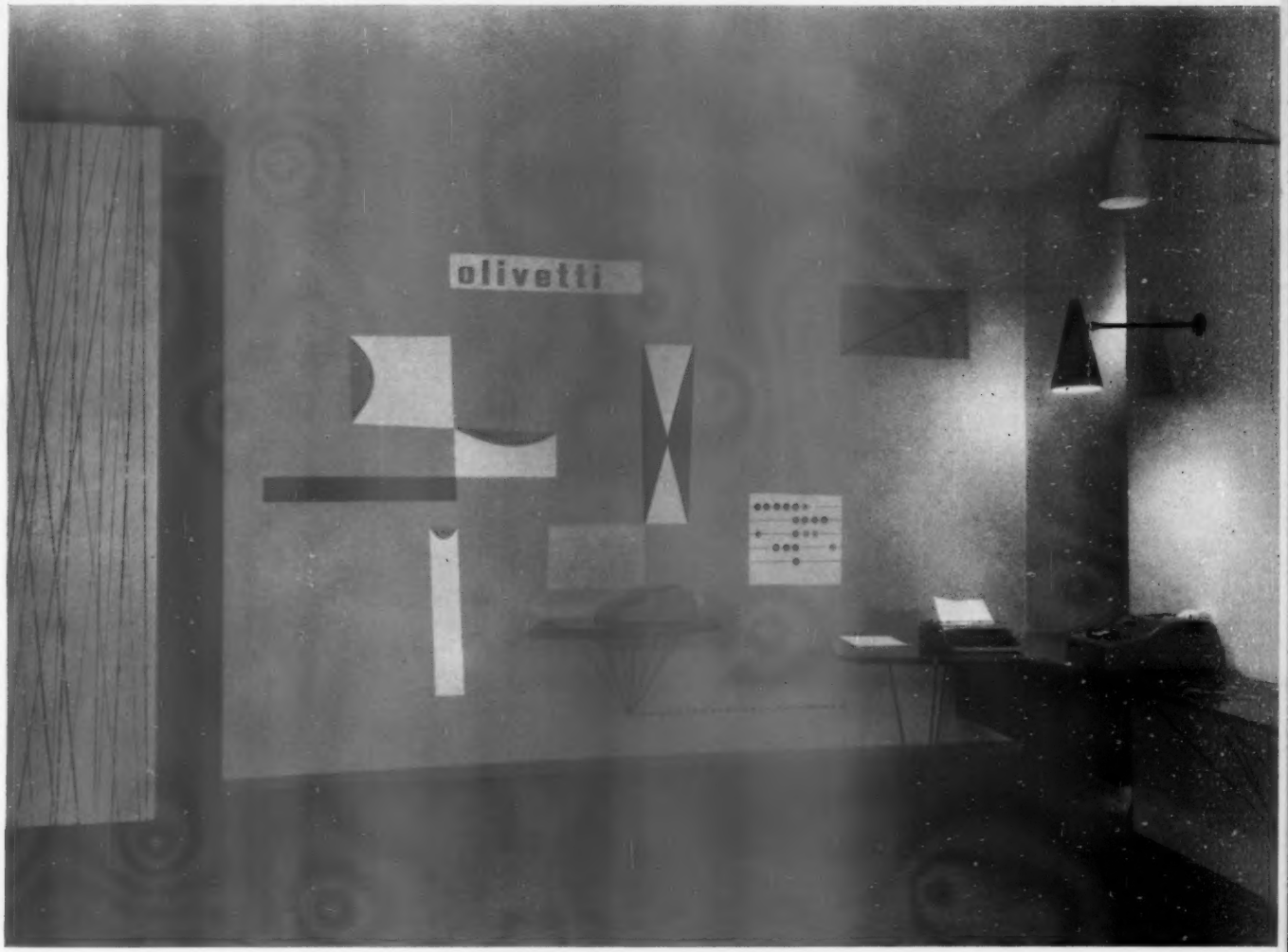
2

Berkeley Square Demonstration tables, a display feature and an unobtrusive mail sorting area were required without making structural alterations. At right-angles to the undulating screen wall of West African gaboon veneer, 1 on the previous page, is a white cellulosed ply partition which stands in front of the existing wall painted pink-grey to form the mail sorting area. The mural design to the left of it is in dark grey, black, orange, red and lime on pink-grey. The floor is covered with 12 in. olive rubber tiles. The display feature, 2, is constructed of ¾ in. ply cellulosed lime with white and orange beads. Display panels have black type and designs on a white ground with coloured bands of photo-stain. Tables and chairs are by the designer, the chairs being covered with a fabric by Jaqueline Groag. Light fittings have glossy black or orange frames with white, orange and lime cones.

3

Kingsway This interior had to be redesigned without structural changes and at a minimum expenditure. The free-standing display screen, 3, was constructed from existing components: its black and white cellulosed panels screen an office space behind. The lamp fittings are lime and orange. The mural panel, concealing a balustrade, is made up of photographs and drawings by the designer coloured with bands of photo-stain in turquoise, orange and lime. The right wall is mushroom pink, the left wall dove grey and an existing recess painted white with a dark brownish-green texture added. The ceiling is white. Tables are glass with sapele veneered edges supported on black cellulosed steel rod.

4



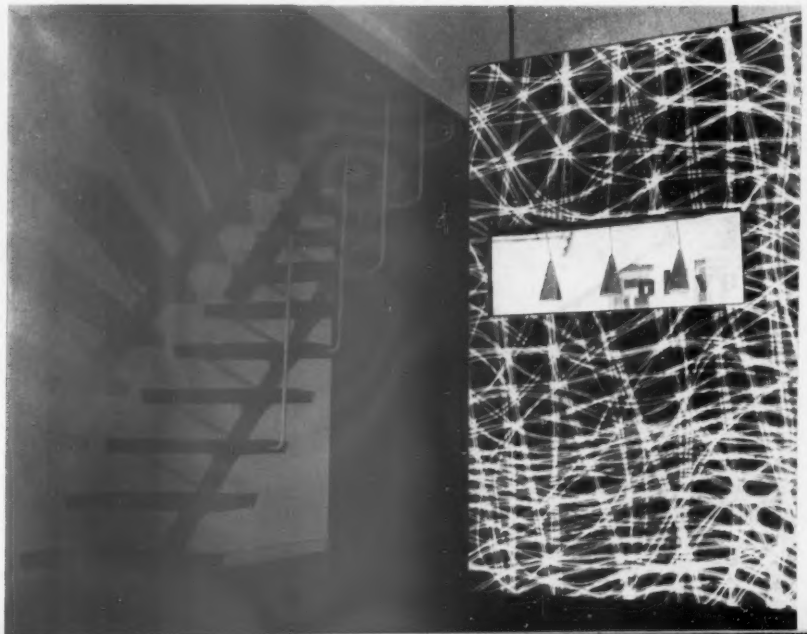
5

Watford The interior is divided into two parts—showrooms and service workshop. A screen of ¼ in. ply, seen on the left of 4, was added to give some privacy to the office behind: it is painted yellow ochre with a dark green textured pattern added by the designer. A double door at the rear was filled and surfaced: the decorative treatment is in grey-green, black, white, dark grey-green, lime and orange. A reception-secretary's table was placed along one wall with a filing cabinet built into the recess. The floor covering is blue-grey marbled linoleum with plain yellow linoleum in the window bed. Display shelves, 5, are of sapele wood supported by light steel rods, cellulosed black and orange: chairs by the designer.

6

Leicester The existing premises, 6, needed to be entirely redesigned. The front window was replaced with a simple 8 ft. square of plate with a glass door to the right. A complete new staircase unit with a 2½ in. diameter steel spine and hardwood treads, 7, was built and

7



Leicester
bolted through a footplate to a concrete slab below the floor. Side walls are pink-grey, the rear wall lime with a deep red door and the panel behind the stairs dark olive-green. The screen separating the showroom from a more private reception area behind has a photographic enlargement of loosely woven fibre, 8, with a wired glass window inset. Floor covering is light brown linoleum with a 4 ft. strip of dark green across the width of the showroom inside the front window. Tables and shelves are sapele-veneered boards supported by light steel members.

8

9

Nottingham Although the budget was limited it was required that bad existing details should be concealed. The left wall, 9, concealing an iron column is of t. and g. sapele boarding with natural waxed finish ; the right wall, 10, is mushroom pink. The undulating ceiling is hardboard on a frame built over irregular beams and finished matt white. Three suspended light troughs are cellulosed orange. The rear wall has a design in black, beige, olive green, pale olive, salmon red and lime yellow on a white ground. The curtain is a David Whitehead fabric and floor covering plain dark blue linoleum. Light fittings have black and grey frames with turquoise cones. Display tables are sapele-topped.

10

Case-Book Precedents

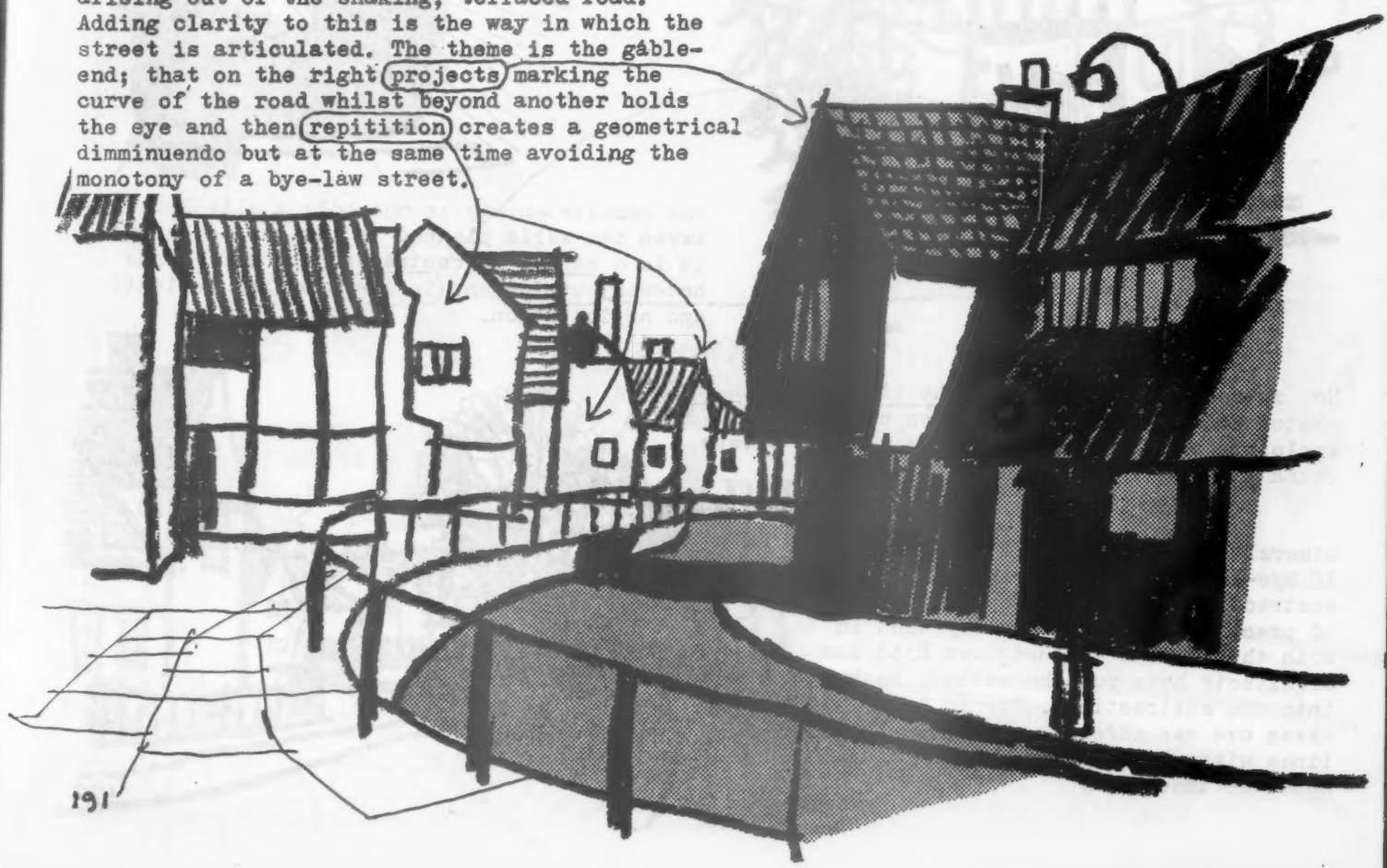
Gordon Cullen

If not yet a popular art, Townscape could legitimately be called a new art in the sense that it has never been practised before on a nation-wide scale. That, however, isn't to say that its principles have never been applied in this century by individual architects of sensibility and insight. A careful combing out of housing schemes and garden suburbs would reveal the work of a number of otherwise little known names, places. Here for the record are two. The first, already singled out by S. L. G. Beaufoy in the Town Planning Review, is the Well Hall Estate, Eltham, built in 1915. The second, built in 1953, is Redgrave Road, Basildon. Though small it is a copybook example of the kind of peaceful revolution that can be achieved in a bye-law wilderness by a positive visual policy. A prototype not only provides the designer with a yardstick against which to measure his endeavour, it comes as an unlooked for but reassuring handshake to the designer who may feel he is working in isolation. These examples are just such prototypes and as such qualify for any town-design case-book.

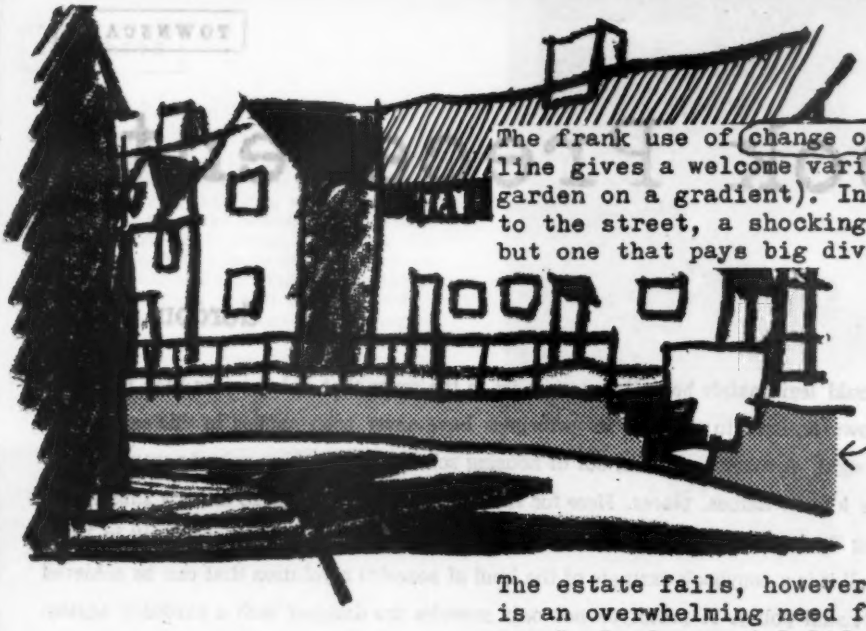
1915 WELL HALL ESTATE, ELTHAM

Architects.
Mr. (later SIR FRANK) BAINES,
A. J. PITCHER, G. E. PHILLIPS,
J. A. BOWDEN and G. PARKER.

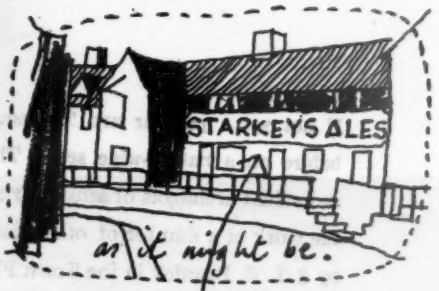
Here the density fluctuates from the open village green to solidly built-up streets producing sudden contrast. This picture shows the unfolding of successive views..anticipation... arising out of the snaking, terraced road. Adding clarity to this is the way in which the street is articulated. The theme is the gable-end; that on the right (projects) marking the curve of the road whilst beyond another holds the eye and then (repitition) creates a geometrical dimminuendo but at the same time avoiding the monotony of a bye-law street.



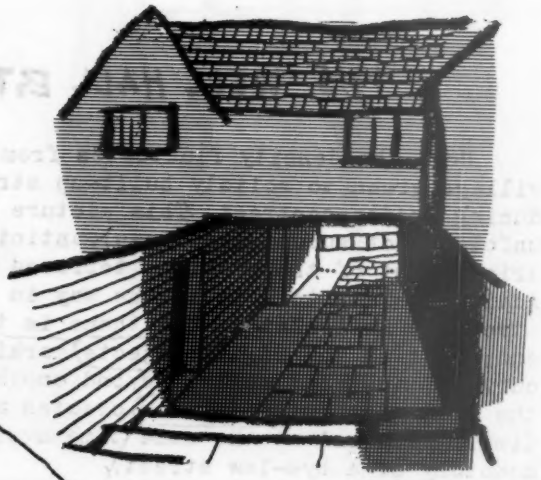
FIVE TYPEWRITER SHOWROOMS



The frank use of change of level which accentuates the snaking line gives a welcome variety to the street, (as opposed to the garden on a gradient). In certain parts the houses are built up to the street, a shocking heresy to the splendid isolation school, but one that pays big dividends in producing urban character.



The estate fails, however, on the score of Multiple Use. There is an overwhelming need for shops or a pub, some hint that the people lead a social life. One keeps looking for the awning or the inn sign which never comes.



The pedestrian way is not only a slit left between two walls planned to let people through, it is a series of contrasts, the difference between outside and inside arousing curiosity and anticipation.

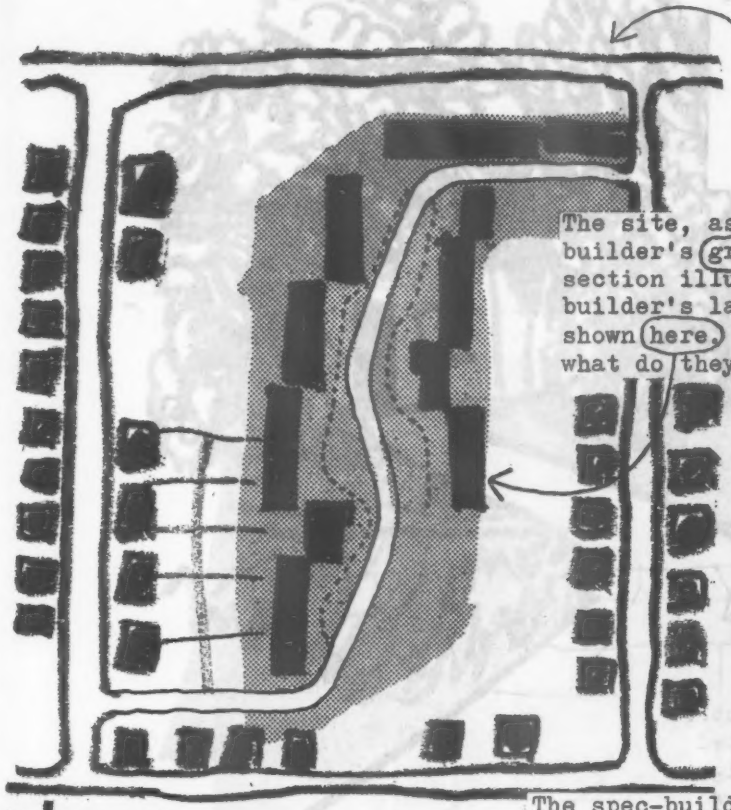
Not a tree was removed from the site and this sketch shows how a tree has been used to form enclosure to a section of the road which sweeps round it.

General Note
If bye-laws can be described as legal abstractions formed out of a variety of precedents then we may say that in both this layout and Redgrave Road the architects have put the variety back into the abstractions. For in both cases use was made of waivers on build-lines without which the schemes would not have succeeded.

1953, REDGRAVE RD. BASILDON NEW TOWN

Chief architect NOEL TWEDDELL
Assistant architects JOHN GRAHAM
JOHN NEWTON

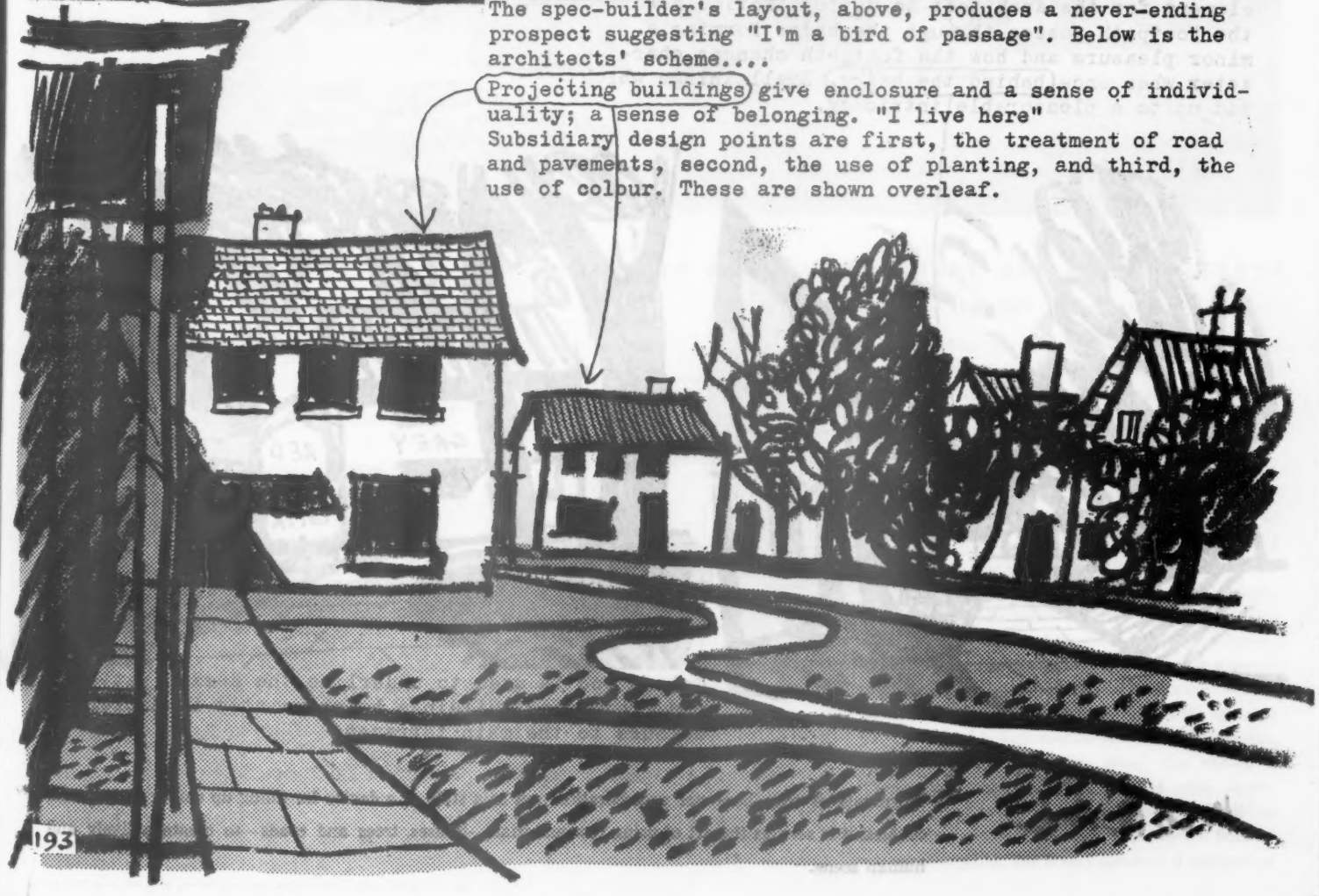
Landscape consultant
SYLVIA CROWE



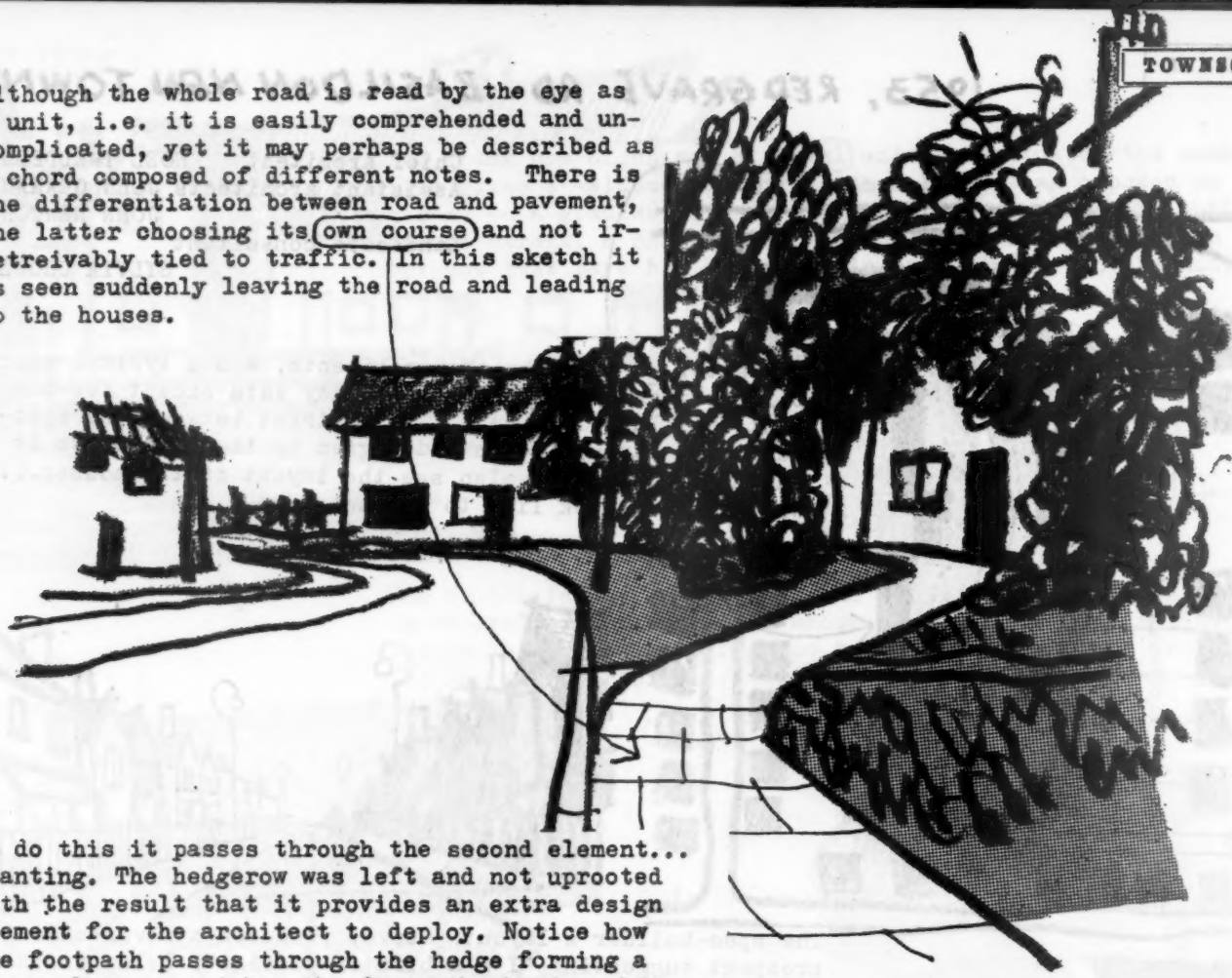
The site, as found by the architects, was a typical spec-builder's gridiron of roads already laid except for the section illustrated here. The contrast between the spec-builder's layout and that designed by the architects is shown here. One can also see the layout of the houses... what do they look like to the user?

The spec-builder's layout, above, produces a never-ending prospect suggesting "I'm a bird of passage". Below is the architects' scheme....

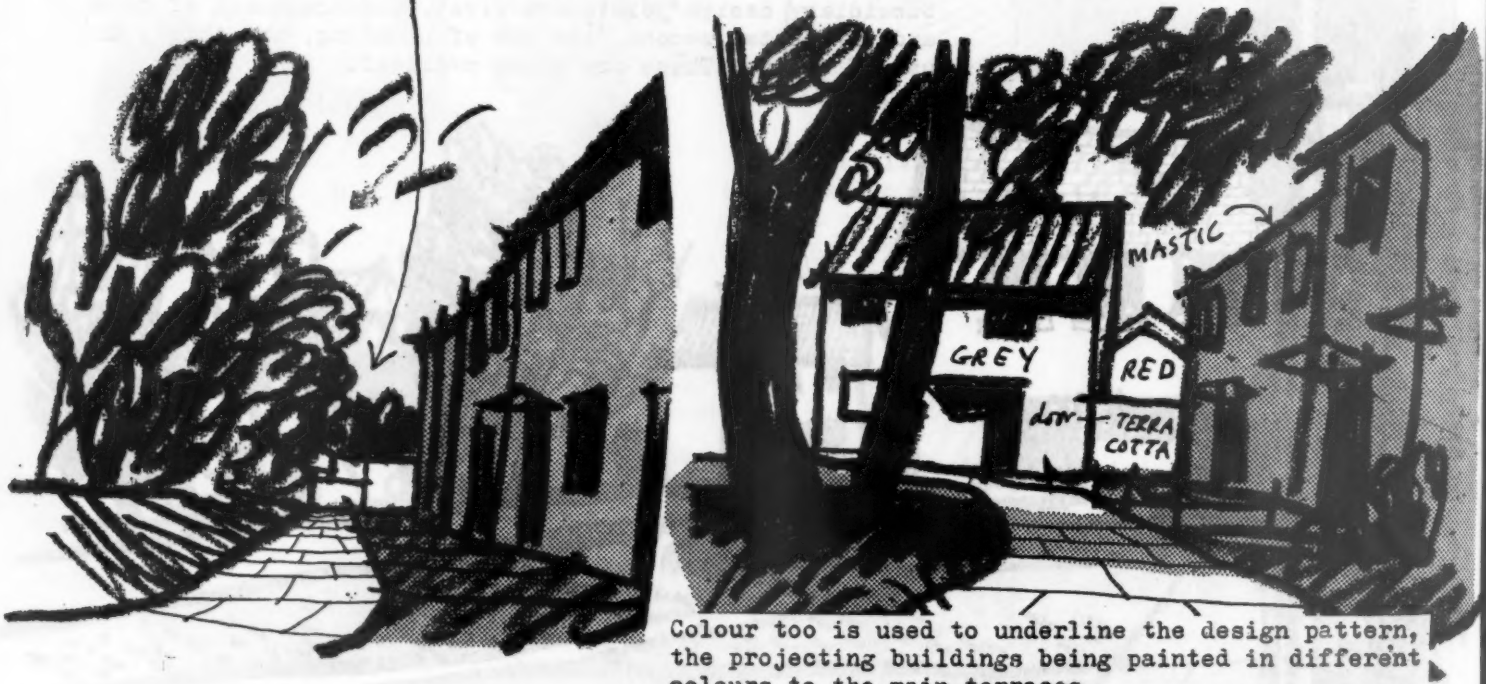
Projecting buildings give enclosure and a sense of individuality; a sense of belonging. "I live here"
Subsidiary design points are first, the treatment of road and pavements, second, the use of planting, and third, the use of colour. These are shown overleaf.



Although the whole road is read by the eye as a unit, i.e. it is easily comprehended and uncomplicated, yet it may perhaps be described as a chord composed of different notes. There is the differentiation between road and pavement, the latter choosing its own course and not irretreivably tied to traffic. In this sketch it is seen suddenly leaving the road and leading to the houses.



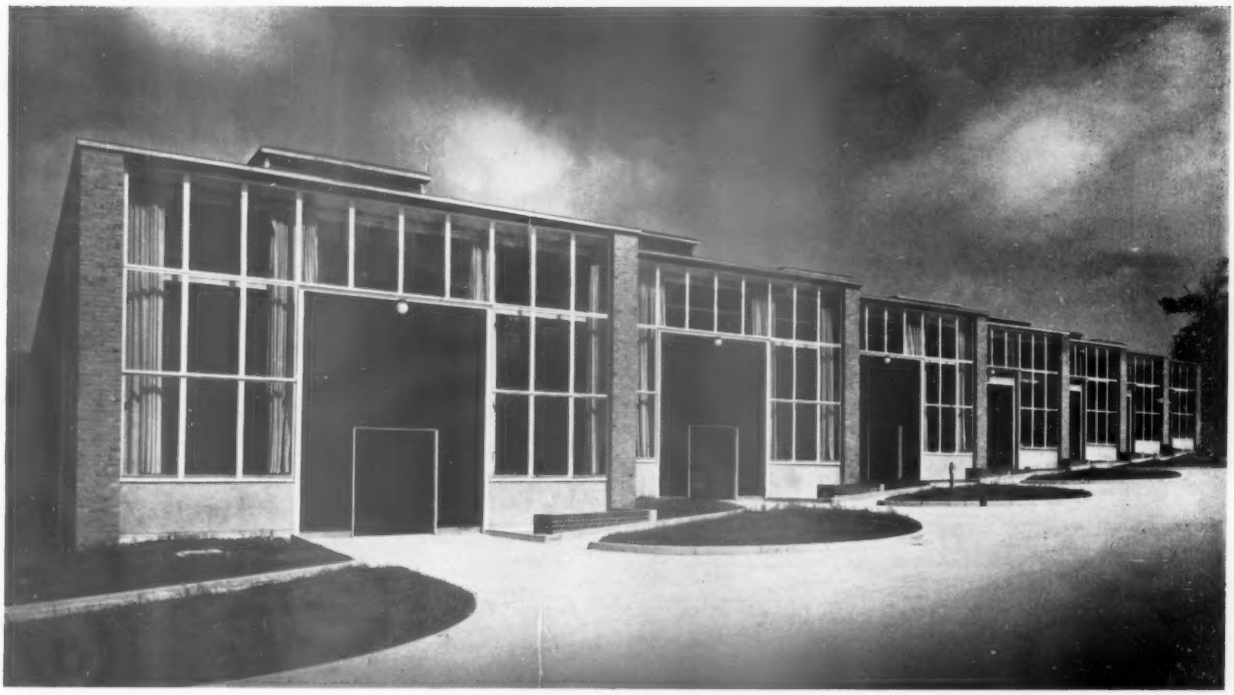
To do this it passes through the second element... planting. The hedgerow was left and not uprooted with the result that it provides an extra design element for the architect to deploy. Notice how the footpath passes through the hedge forming a minor pleasure and how the footpath changes character when once behind the hedge. Small things which add up to a pleasurable intricacy.



Colour too is used to underline the design pattern, the projecting buildings being painted in different colours to the main terraces.

MORAL

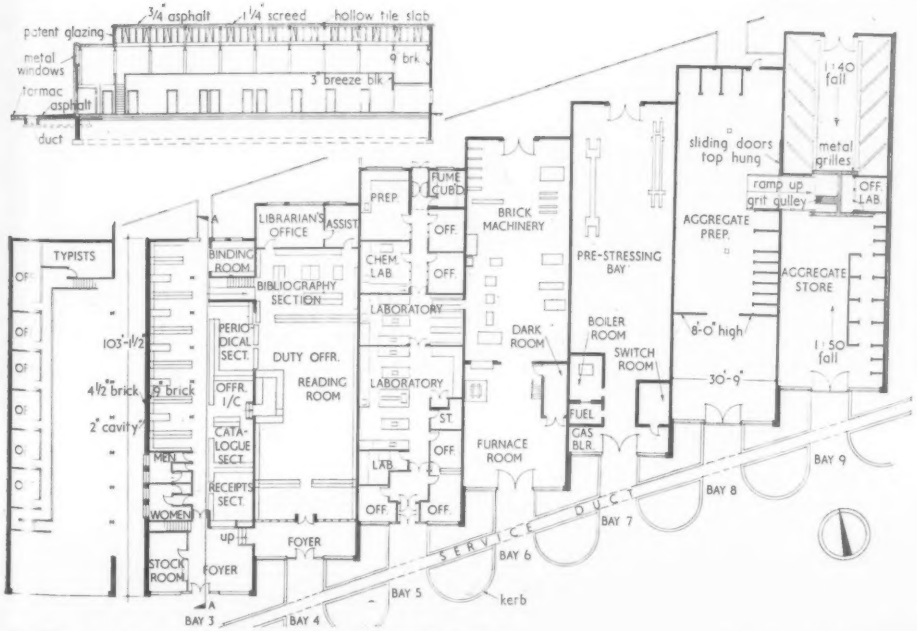
Townscape is seen here not as decoration, not as a style or a device for filling up empty spaces with cobbles: it is seen as the art of using raw materials—houses, trees and roads—to create a lively and human scene.



1, *the laboratories from the south-west.*

LABORATORIES AND BOILER HOUSE AT GARSTON, HERTS

A. C. HOPKINSON, Chief Architect's Division, Ministry of Works



ground floor plan, first floor plan of bay 3 and section A-A scale: 1/48 in. = 1 ft.

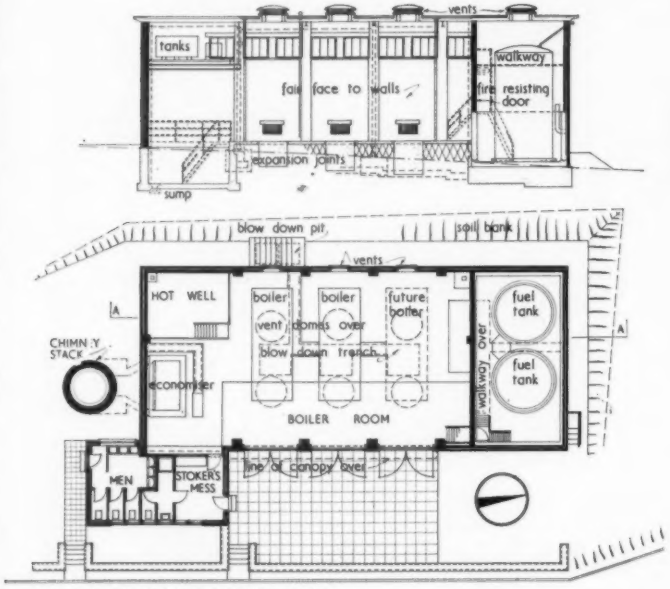
These buildings for the Building Research Station are part of a comprehensive scheme of development. There will be nine bays in all when bays 1 and 2 are built on the west side to accommodate development work by the chemistry and engineering divisions. The bays are built in echelon formation on plan as the most economical use of a sloping site. The laboratories are steel framed, to support gantry cranes. Walls are of brick, faced with London stocks; floors are of reinforced concrete with granolithic finish, and roofs are of hollow tile construction, covered with asphalt. Natural lighting is provided by glazing on the south and by continuous monitor roof lights with standard patent glazing. Double doors large enough to take a lorry were required at the end of each shop, but where the accommodation has been adapted for temporary purposes, the openings have been filled in with weather-boarding and domestic-size glazed doors have been fitted. The fair-faced internal walls and roofs are finished with plastic emulsion paint to colour schemes designed by BRS in collaboration with the architect. Woodwork is finished with gloss oil paint. The library furniture is designed so

2

3

that it can be re-used when the permanent library is built. The laboratories are supplied with gas, electricity and hot and cold water.

The boiler house is of load-bearing brick construction, with brick piers in the walls and steel stanchions between the boiler beds, supporting a grid of rolled steel joists, which in turn carries a flat roof of hollow tiles. The roof is finished with bituminous felt on lightweight screed. Walls are faced with multi-coloured stock facings. There is space for three large oil-fired boilers: their fuel is creosote pitch, stored in two cylindrical tanks housed in a compartment at the north end of the building which has a special reinforced concrete base. By means of the economizer, mains water is heated before reaching the boilers by exhaust fumes, thus lessening the load on the boilers.



plan and section A-A ½ scale: 1/32 in. = 1 ft.

Laboratories and Boiler House at Garston, Herts

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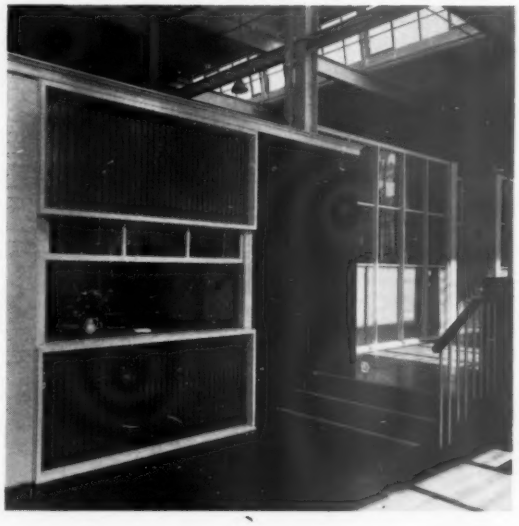
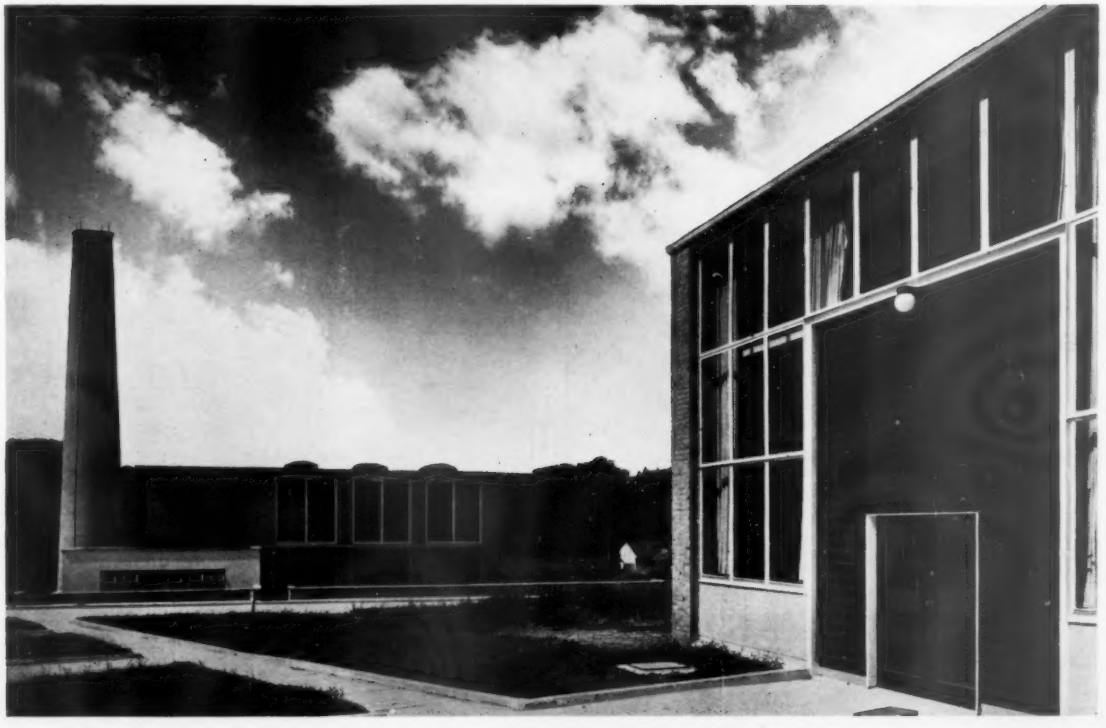


2, laboratories of clay technology and asphalt sections of chemistry divisions. 3, prestressed concrete studies in progress in block 7. 4, the main entrance hall. 5, view from south-east: on the right is bay 3 with the boiler house beyond.



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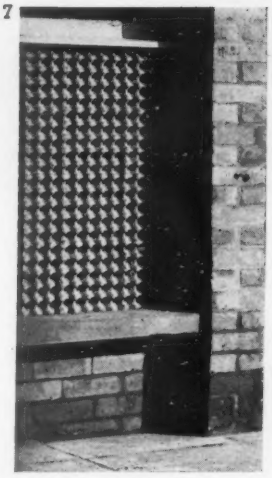
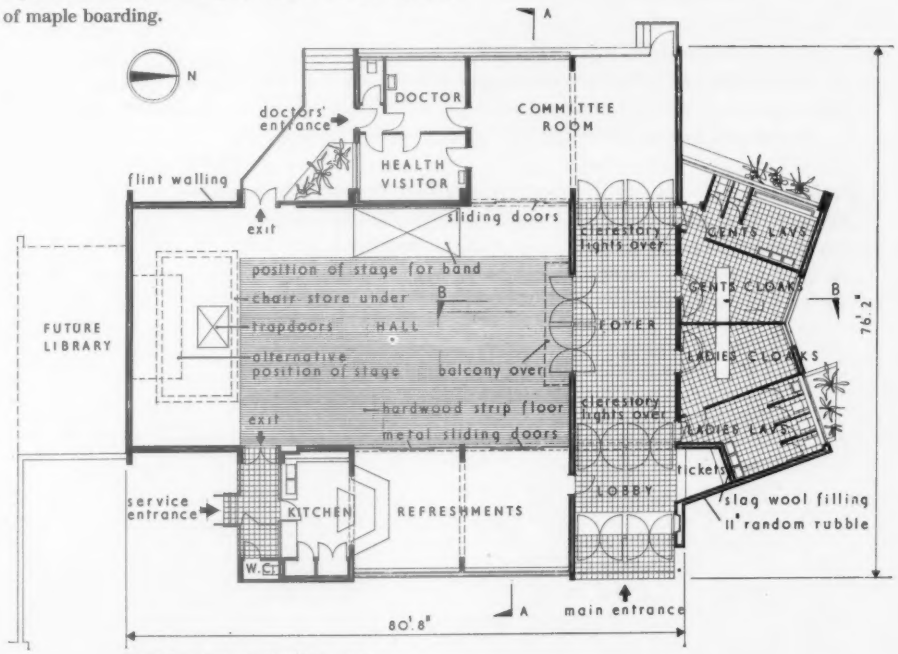


COMMUNITY HALL AT HEMEL HEMPSTEAD NEW TOWN, HERTS

H. K. ABLETT: Chief Architect, Hemel Development Corporation; M. HARDSTAFF, architect-in-charge.

This social hall in Queens Square is the first of its kind in any of the New Towns. The hall had to be planned for many different types of social function—dances, children's dancing classes, banquets, musical recitals, public meetings, large and small committee meetings, and for use as a health clinic. The public rooms adjoin the main hall, so it is possible to get into any of the ancillary rooms without disturbing the occupants of any other. The stage and most counters are on wheels for flexibility.

Roofs are carried on reinforced concrete beams for the high level part of the building and on mild steel channels for the low level parts, supported on brick posts. Walls are built in stock bricks or Hornton limestone random rubble. Pitched roofs have timber trusses. Panel infilling is either in egg-crate pattern concrete blocks or the random flints which appear on various buildings and screen walls in the neighbourhood. The building is entered through a square lobby with a ceiling of open joists, 8 feet 8 inches above floor level and carried on wrot iron brackets on the foyer side. The foyer is the same width as the lobby, but is twice as long, and has a raked ceiling which is plastered, painted blue and contains recessed light fittings. In the north wall of the foyer, which is painted light grey, is a panel containing doors to cloakrooms, with between them a unit of vertical softwood boarding and a rack for indoor plants. The hall ceiling is painted the same shade of blue as in the foyer: the recessed lights can be dimmed. The lower half of each end wall is fair-faced brickwork, the upper half is faced with acoustic tiles. Side walls are plastered and painted grey. The semi-sprung floor is of maple boarding.



ground floor plan scale: 1/24 in. = 1 ft.

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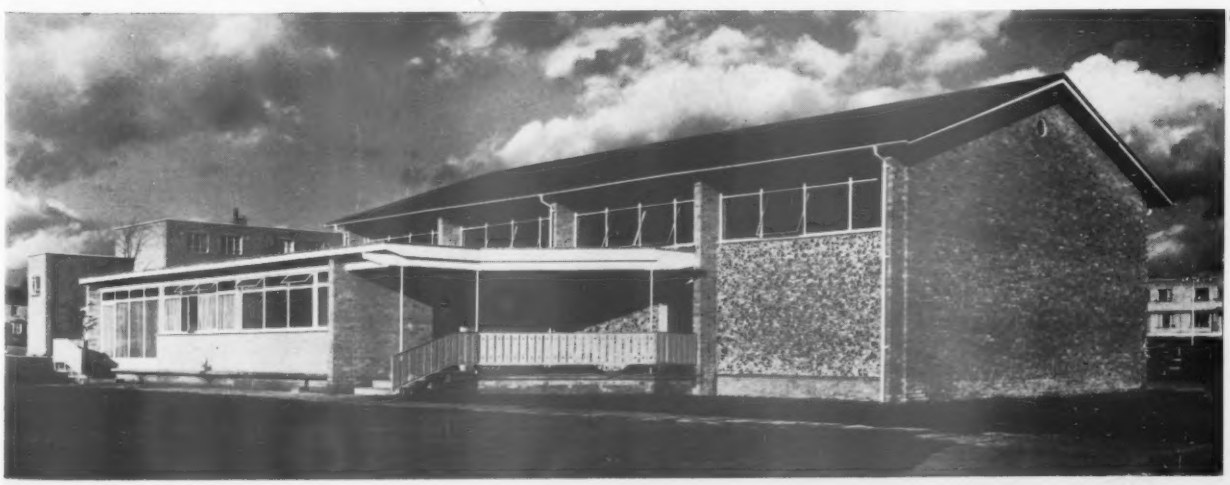


6, view of the refreshment room, showing the buffet counter which is faced with vertical sycamore boarding. 7, detail of 'egg-crate' precast concrete blocks which are painted blue. 8, general view of the hall from the south-west.

9, junior assembly hall from the south-west.

PRIMARY SCHOOL AT COVENTRY

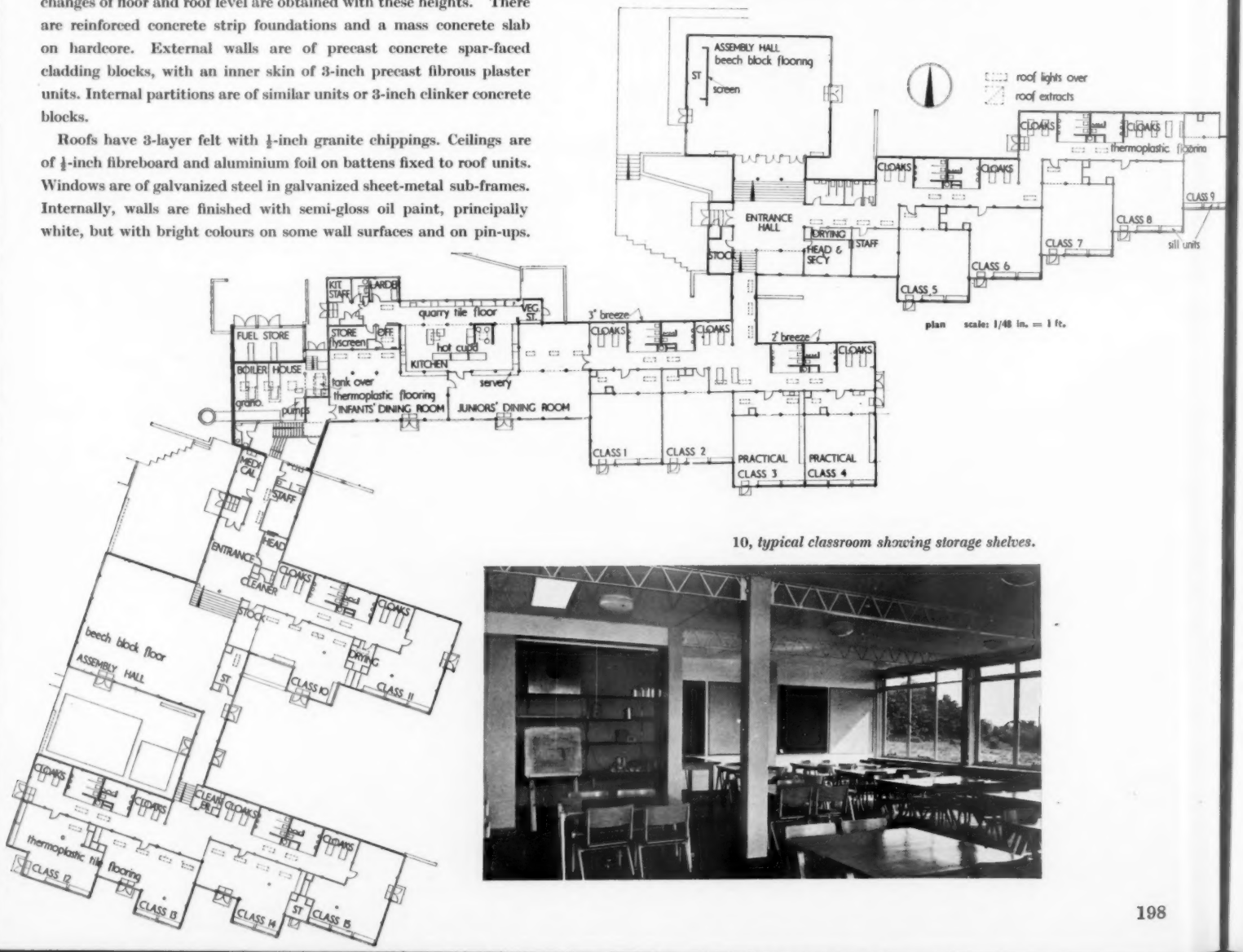
ARCHITECTS CO-PARTNERSHIP

This is a two-form entry junior mixed and infant school consisting of nine junior and six infant teaching spaces, as well as two assembly halls, separate dining rooms and entrances and shared medical inspection room, kitchen and boiler house. There is a good prospect to the south and west and an east boundary of fully grown trees.

The standard steel frame is on an 8-foot 3-inch grid and the stanchion heights used throughout are 8 feet, 12 feet and 16 feet. All changes of floor and roof level are obtained with these heights. There are reinforced concrete strip foundations and a mass concrete slab on hardcore. External walls are of precast concrete spar-faced cladding blocks, with an inner skin of 3-inch precast fibrous plaster units. Internal partitions are of similar units or 3-inch clinker concrete blocks.

Roofs have 3-layer felt with ¼-inch granite chippings. Ceilings are of ¼-inch fibreboard and aluminium foil on battens fixed to roof units. Windows are of galvanized steel in galvanized sheet-metal sub-frames. Internally, walls are finished with semi-gloss oil paint, principally white, but with bright colours on some wall surfaces and on pin-ups.

Floors are covered with thermoplastic tiles in grey and black throughout, except for beech blocks in assembly halls, buff concrete tiles in lavatories and grey terrazzo on stairs. Exposed beams and window sub-frames are painted light grey and fibrous plaster stanchion casings are white. The following colours from the Munsell range were used: putty-colour on metal panels below windows, scarlet on doors, red on junior assembly hall ceiling and blue on entrance hall ceiling.



10, typical classroom showing storage shelves.

LANDSCAPE

VENETIAN GARDENS

The important exhibition of photographs of Venetian villas—from Gothic, through Palladian to Neo-Classical—which is on show at the RIBA until March 27 will concentrate very properly on the architectural components of a pattern of cultured rural existence in which gardens also played a constituent part. Yet, in spite of their important role, these gardens have been very little studied, and in books on Italian gardens references to those of the Veneto are sparse. This is probably due to the fact that they are small and simple in comparison with the vast and complicated layouts which surrounded the villas of the Roman and, to a lesser degree, the Tuscan nobility; also that they generally lacked many of the characteristics considered peculiar to the 'Italian' garden; such as Nympheums, grottoes, elaborate knotted and embroidered parterres, water courses, and jeux d'eaux.

It is notable, however, that the earliest Italian books on gardening were published in the Veneto; such as Crescenzio's *Tratta di Agricultura* in 1486, whose eighth book is devoted to gardens; and Polifilio's *Hypnerotomachia*,* in 1499, from which the engravings 1 and 2 are taken. A few years earlier, in 1483, Marin Sanuto made

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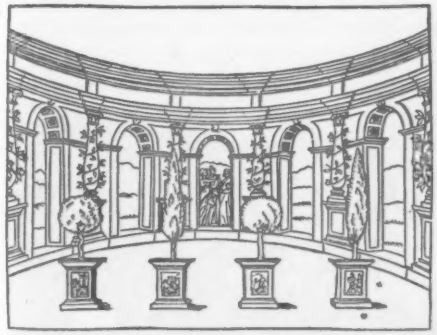

a journey through the Venetian Terraferma, and in his journal he mentions many villas and gardens; notably one at Cologna, 'with a most beautiful pergola before the door.'

During the following three centuries

* A detailed, illustrated, description of a dream garden by a connoisseur of architecture, Fra Francesco Colonna.

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Venetian presses were to produce an ever increasing stream of books on the life in 'the Villa,' in which garden design and planting played an important part; also straightforward works on horticulture. The letters and journals of the Venetians themselves, and of foreign visitors such as Sir Henry Wotton, John Evelyn and Montaigne, give ample evidence of the Venetian passion for gardening.

Although the Venetians were evidently among the pioneers of the movement which began in Italy and slowly spread to the rest of Europe, transforming the minute enclosures of the mediaeval world into the spacious pleasure gardens of the renaissance, they were also highly conservative; and right up to, and in some cases through, the nineteenth century era of the 'English' landscape style they still preserved the basic features of mediaeval garden design. The eighteenth century engraving, 3, shows a garden design still

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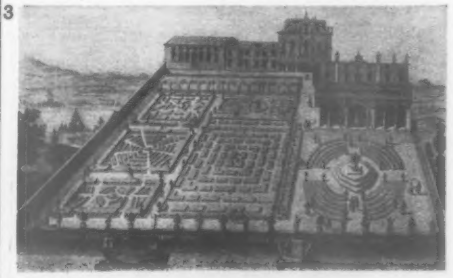

closely following Serlio's patterns of the sixteenth century.

This conservative simplicity of style of the Venetian gardens of the Terraferma is due to two interdependent factors: the psychology of the people for whom they were made, and its effect upon their choice of terrain.

The Venetian patrician of the renaissance was a worthy descendant of the hard-headed men of affairs who had raised the Most Serene Republic to her predominant position in the world of commerce. By the first half of the sixteenth century the discovery of America, and the voyages of the Navigators, had already brought a diminution of her oriental trade; this, coupled with the pacification of the Terraferma under her hegemony, led them to invest part of their capital in land. Sound business men as they were, they understood the importance of the personal supervision of their investments, and instituted the custom of staying on their country estates during the summer and autumn.

Thus the Venetian Villas were primarily farmhouses; and as good farming land in general, and the Veneto in particular, tends to be flat, their gardens had to be adapted to this type of site, in contrast to the general renaissance practice in Italy where the choice of site was dictated by its suitability for the creation of a garden. The Roman pleasure gardens of the Cardinals on the hillsides of Tivoli, Frascati and Bagnaja illustrate this point.

To this limitation in the choice of site the Venetian gardens probably owe their retention of many mediaeval features. The cost of creating artifically in a flat country the hanging terraces, cascades and elaborate fountains, characteristic of other Italian renaissance gardens, would have been prohibitive. Thus practical considerations, allied to a conservative turn of mind, evidently led their owners to retain the old mediaeval layout, which was admirably suited to their site because it had been evolved for the flat space of land enclosed by the walls of a castle, the precincts of a cloister, or the waters of a moat. It is remarkable that the gardens of the Euganean, Berici and Alpine foot hills, whose sites are eminently suited for treatment in the Italianate style of the south, have also preserved the same local and mediaeval characteristics.

The plan of the garden of the Villa Sagredo, at Marocco, near Mestre (reproduced on the cover), was published in 1726 as a model of garden design. The author of the design and the book, Don Paolo Clarici, died before his *Istoria e Culture delle Piante* appeared, so that it is probable that the actual design is earlier, probably about the turn of the century. It is noticeable, however, that, although the garden belongs to the elaborate type of the eighteenth century, it still retains most of the basic characteristics of Crescenzio's garden of over two hundred years before. The central vista; the cobbled path, now with some paving introduced near the house; the enclosing wall, become a very elaborate affair of stone topped with brick, and ornamental pilasters; the parterres are still basically

rectangular, though they now include elaborate 'embroidery'; in this particular garden there is no fountain, but the quatrefoil shaped pools behind the house still perform the mediaeval function of fish ponds; the simple pergola with vines has been transformed into long open passages of clipped evergreens. Only the rabbit is absent, but he still held his place in other contemporary gardens, as the illustration, 12, shows.

According to local tradition the villas were built close to the main road so that the ladies of the house, who were bored

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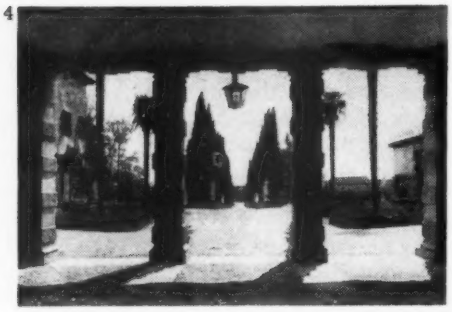

by undiluted rural seclusion, could see all the carriages which passed, and know who was going to visit whom. The central vista, carried to the other side of the main road, of the Villa Monga at Verona, 4.

The contrasting floor of cobbles, paving, and turf which surrounds the fountain (an unusually elaborate one for the Veneto is this famous hemisphere of Vittoria's stucchi) at Maser, 5, is partly original

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and partly modern, but it is perfectly in keeping with Venetian garden tradition; the same components were used in Clarici's plan for the garden of Villa Sagredo.

More typical is the sixteenth century fountain, 6, in the garden of Palladio's Villa Badoer at Fratta Polesine, from which 7 also comes, a sixteenth century

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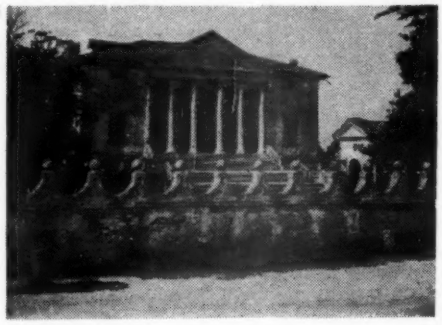

floor of paving stones and grass.

The surrounding wall, 8, of the same villa is exactly similar to the walls that flank the Malcontenta in the Quattro Libri, which have since disappeared. (More complicated versions of this same style are to be seen in the Valpolicella.)

The original rectangular beds, dating from 1545, of the Botanical Garden in Padua, 9, which Evelyn visited in 1645, and noted in his diary: 'The next

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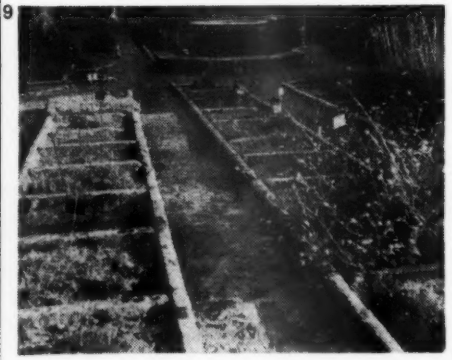
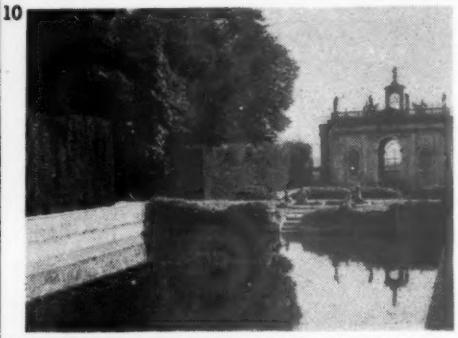


morning I saw the garden of simples, rarely furnished with plants, and gave order to the gardener to make me a collection of them for an hortus hyemalis, by permission of Cavalier Dr. Veslingius, then Prefect and Botannic Professor as well as of Anatomy.'

10, ornamental fish ponds in the seventeenth century gardens of Valzanzibio. In the Veneto water was the most convenient means of transport; and Palladio advised building villas on a river or canal for this reason, and for its beautiful

10



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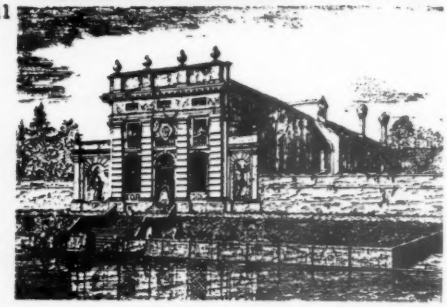
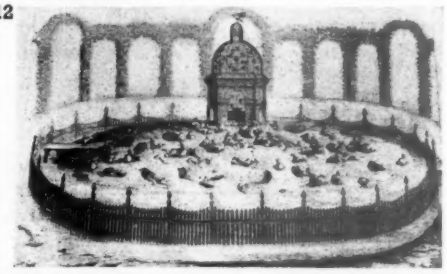


effect. 11, the Villa Bembo Valier on the Brenta near Padua.

Rabbits were still regarded as an amusing form of garden decoration in the eighteenth century, but they were confined to artificial islands like these of Valzanzibio, 12, and Villa Emo at

12



Battaglia, with, one imagines, a considerable saving of young plants.

Statues, stone vases and ornaments also played an increasing part in Venetian garden furnishings. The photographs show a statue of Diana at Palladio's Villa Emo

13

14

at Fanzolo, 13, and a basket of fruit at Villa Emo at Battaglia, 14.

Sundials, and later clocks, were an integral part of most Venetian garden

15

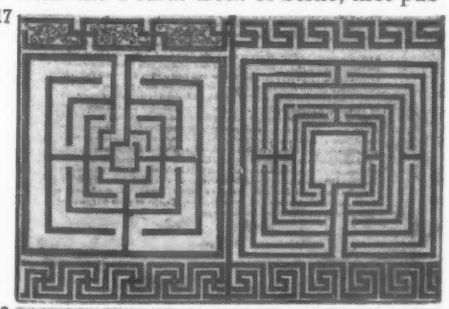
design; either as part of a building, as at Maser, 15, and Villa Sagredo at Marocco, or as part of the actual planting, being carried out in topiary. Loggias, suitable for banquets, are familiar to us from the paintings of Veronese and the Tiepolos;

16

this Valmarana loggia, 16, at Vicenza is attributed to Palladio.

Labyrinths and theatres were from time to time incorporated in Venetian gardens. The two plans illustrated, 17, are taken from the *Fourth Book* of Serlio, first pub-

17



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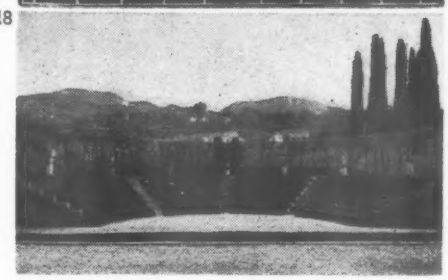


lished in 1537, and the theatre, 18, is in the gardens of the Villa Rizzardi.

Now many of the beautiful villas of the Veneto are falling into ruins, and their gardens have become cabbage patches or wildernesses. A topographical monument, of a standing equal to the Loire valley and its chateaux, or Derbyshire with its great country houses, is being allowed to waste away. The problem is recognized in many quarters in Italy as a national one, and one of the reasons for the assembly of the exhibition now at RIBA was to call attention to the fate that is overwhelming the Venetian villas. No immediate solution is at hand, only a patchwork of private enthusiasms and occasional state intervention, but England, which owes so much to the villegiatura tradition of the Veneto, has a particular need to be awake to the disasters which time and negligence have wrought. **Georgina Masson**

EXHIBITIONS

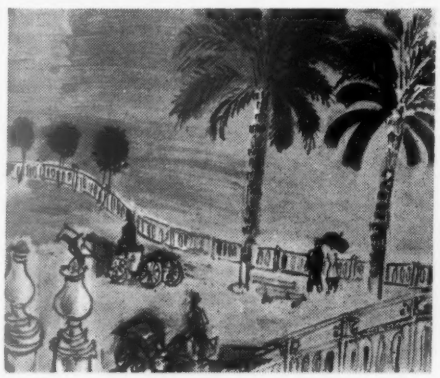
PAINTING

After Dufy won the International Prize for a badly chosen group of paintings shown at the Venice Biennale in 1952, plans were started for a big retrospective at the Musée d'Art Moderne, but he died before it was ready, and it became a memorial exhibition. It is part of this exhibition, with some remarkable additions from English collections, that the Arts Council brought to the Tate Gallery, and it is the best opportunity we have had of paying our respects to the painter who has created the most sociable art of the twentieth century. But Raymond Cogniat, in his Introduction to the catalogue, remarks that 'however high a painter's reputation may stand it is always possible that he is misunderstood,' and he makes it clear that he considers our constant praise of Dufy's wit and facility an enthusiastic way of underestimating his genius. Another way in which we have tended to belittle him is by overpraising his *fauve* paintings at the expense of his later work. These early works were very well painted, but he used *fauve* vehemence in a pre-*fauve* manner. *Fauvisme* seems to have been for Dufy a matter of hanging a tricolour across a post-impressionist street, as if it were dictated by a dissonance in an actual scene, and he was never deeply involved in the creation of new harmonies at the level of a paroxysmal, all-over heightening of colour. But the interplay of line and colour which characterizes his mature style and gives it its sparkling resonance is a distillation of *fauvisme*.

Some of the paintings of the late twenties and early thirties are among the best achievements of our time. Some glimpse at least of the open air was absolutely necessary to the success of his paintings, and he could well be called the master of the deep blue skies. The studies of his studio in the Impasse Guelma are beautiful, but the walls are blue and mingle with the sky in an unframed canvas or become a poignant fading away of the blue beyond the window: the paintings of concerts and receptions are noticeably lacking in the lyricism of his racecourses and regattas.

Sea Front at Nice, 1, from an English collection, contains one of the loveliest of his variations on what was perhaps his favourite theme—dark green foliage against a deep blue sky, and it is pleasant to be able to say that the finest picture in

1



the exhibition—*Champ de Blé*—came from a house in the Cotswolds. It is a panoramic view of a harvest, and blue and red horses are clearing a broad swathe in the corn. It treats one of the universal themes that have to be renewed in every age: it is the great harvest picture of the twentieth century, and I believe that it gives him a place beside Breughel and Van Gogh.

The craftsmanship of the ceramists, glass-workers and rug-makers in the exhibition of Modern Art in Finland held at the New Burlington Galleries was of a very high order. The paintings and sculpture were somewhat impersonal exercises in various international styles, and staged a mild battle of the schools. Sipilä, whose other pictures can only be called painstaking, dropped into a 'Sunday painting' style to provide in his *City Scene*, 2, the

2

most pungent sense of 'foreignness' that the exhibition afforded.

The exhibition at the Redfern called 'Russian Emigré Artists in Paris' was an object lesson in how to make the most of a collection of good, professional paintings somewhat lacking in personality. To begin with, the romantic name given to the exhibition was irresistible, and the pictures themselves, considered *en masse*, made a far from negligible impression; the effect produced by so many painters using writhing brushstrokes and sonorously oily paint was distinctly exotic. It was difficult to say that one painter made a bigger impression than another because even the Soutines were chosen to merge with the rest, but Kikoine's *Femme allongée*, 3, is repre-

3

sentative of the luxurious communal unease.

Another title with romantic associations —'The Grand Tour'—cast a glamour over the collection of tidy eighteenth century landscapes at Arthur Tooth & Sons. They were views of Rome, Venice, Naples and other Italian towns, and included two Canalettos, a Guardi and a Richard Wilson, but they were sober examples of the work of these masters and did not outshine the pictures of lesser-known artists. The effect of an even distribution of talent was not dull but rather moving. Johan Richter, whose *The Church of the Redentore from the Zattere*, reproduced in 5 on the facing page, was a Swede who painted Venetian scenes before Canaletto.

Pic, who has been exhibiting a charming group of oils at Gimpel Fils, is a much travelled man, but the biographical note in the catalogue does not mention visits to Tartary, and in any case his visions of tribesmen on the move, 6, and mystics halting at the wayside entwine themselves too intimately with our dreamiest dreams of Tibet, and Outer Mongolia to be anything but very magical little fantasias.

George Keyt is the most distinguished of living Singhalese artists, and his exhibition at the I.C.A. shows how thoroughly contemporary European forms can be married to an Eastern tradition. His work is decorative and poetic, though a single picture such as 4 cannot alone do full justice to it. His treatment of the feminine figure is often more delicate than this,

4

and the general effect of the show itself, created by line on colour, is a quite ravishing one of a bevy of dusky girls half-hidden by reeds and stalky flowers. **Robert Melville**

CRITICISM

INSIDE WESTMINSTER CATHEDRAL

When W. R. Lethaby wrote an account of the new Westminster Cathedral, of which the structure was then almost complete, in the January, 1902, issue of THE ARCHITECTURAL REVIEW, he summarized its virtues by saying that 'its larger parts cohere into organic unity, and it is set out on lines liberal and suave without unnecessary art-nooks and transparent pretences of spontaneous simplicity.'

What constitutes an art-nook may have changed since Lethaby's time, and it can only be a matter of conjecture whether, if he were able to see the decorations that have been installed in the Cathedral since he wrote, he would either describe them as art-nooks or condemn them as unnecessary. But it is not the purpose of this article to criticize the post-1902 embellishments, except in so far as they disturb the organic unity which Lethaby saw as the special attribute of the whole. The bare brick vaulted interior, 1, has come to be so much admired during the half-century that has passed, and accords so well with our own aesthetic preferences, that we are tempted to regard this splendid example of geometry unadorned, even if it only represents the bare bones of what Bentley planned, as a finished architectural achievement, no less worth conserving for having been accidental, which the intended rich medley of marble and mosaic would not necessarily improve.

Lethaby saw its quality at once. In the article already quoted, describing the interior, he wrote: 'The great size of this reservoir of air at once frees our imaginations. The height and distances allow of that blueing of the atmosphere which turns it from mere nothingness into a visible entity—a portion of Space, a slice of Infinity.'

So far the embellishments have been largely confined to side chapels and the sanctuary, though the scale and mystery of the bare brick vaults were somewhat spoilt a couple of years ago by the inner lining given to two of the domes because they were leaking. Why the remedy could not have been applied outside is not clear. Metal strips subdivide the surface into large panels not nearly so effective, as regards scale or texture, as the original small-patterned brickwork. This refacing of the domes can just be distinguished above the altar in 1, and more clearly in the pendentive of the same dome in 2.

Whatever our own tastes and sensibilities may suggest, the cathedral authorities, nevertheless, could find plenty of arguments in favour of their policy of adhering to Bentley's original conception and completing the embellishment of the interior according to his general design. But what we must quarrel with is the way much of this is being done. Typical of the sort of mistake that should not be made is the choice of marble panelling to face the (liturgically) north wall of the sanctuary, 2, at the back of the gallery, over the Presbytery. The arcaded screen across the front of the gallery is Bentley's, and he intended the full height of the wall behind (as well as the piers of the nave) to be faced with the same Greek *cippolino* marble that already covers the walls of the apse. The markings here run vertically, but in the case of the marble facing to the gallery wall, put up a few months ago, the surface has been broken up into panels with a strong horizontal emphasis, and with a very different colour scheme, which cut across the lines of the arcade with a most unhappy effect.

This is an example of the exercise of poor judgment in carrying out Bentley's general intentions. A far more serious error has been made in the north transept, involving the actual destruction of some of Bentley's own work. A little over a year ago the *verde antico* column placed by Bentley in the centre of the transept was removed and a steel beam substituted, 3, spanning the whole width and supporting the twin arches formerly supported by the column. At the same time these arches and the steel beam were faced with marble and the arches themselves filled in with a coarsely designed marble grid. Not only is the whole effect clumsy but it is completely out of scale with the rest, the wide span of the steel beam faced with marble conflicting

5

6

criticism: inside westminster cathedral

1

1, *the impressiveness of geometry unadorned in the bare brick vaults of Westminster Cathedral, intended by Bentley to be faced with marble and mosaic.* **2**, *recent marble panelling in the sanctuary. Its horizontal pattern cuts across the lines of Bentley's arcade.*

2

criticism: inside westminster cathedral

3, the latest innovation in Westminster Cathedral: the column supporting Bentley's arcade in the north transept has been removed, a steel beam clothed in marble substituted for it and the arches filled by a marble grille. 4, the triple arcade occupying the equivalent position on the south side of the building.

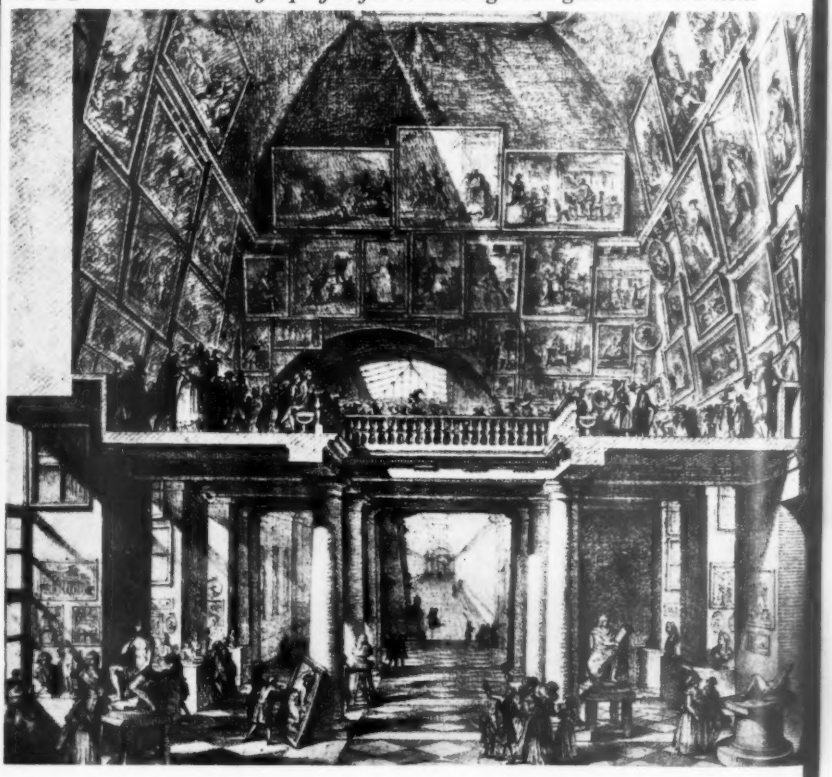
3

4

1767 *Impression of the Salon Carré by Gabriel de Saint-Aubin.*

books: the salon carré

1789 *Charles de Bailly's project for connecting lower galleries and Salon.*



1865 *The Salon Carré restored and reroofed by Napoleon III.*

with the structural veracity, and interrupting the rhythm, of the building as a whole. It is an unforgivable lapse, made worse by the fact that the column that has been removed was one of several (the others are those in the nave) composed of shafts of *verde antico* marble dug from the same quarry in Thessaly from which came the *verde antico* columns used in Sancta Sophia at Constantinople. This quarry, lost for some hundreds of years, was in fact discovered by William Brindley of Farmer and Brindley, the marble merchants who worked for Bentley, and reopened on behalf of the work at Westminster Cathedral. The column that has just been removed has, incredible though it may seem, now been sold by the Cathedral authorities to the trade.

One assumes that the argument for removing the column was that it obstructed the passage of processions moving out of the central-aisled Chapel of the Blessed Sacrament, but if a centrally placed column was undesirable for this reason, the sensible alternative would have been to substitute two columns for one, making a triple-arched entrance, with free passage through the middle, exactly like that which Bentley provided in the corresponding position in the south transept, 4. This would have been in keeping with the existing scale and structural rhythm.

These and other similar errors suggest the need for expert advice, by which the cathedral authorities and their architect, Mr. L. H. Shattock, might be guided in the future. This need was, as a matter of fact, recognized many years ago. During Cardinal Bourne's time (that is, in the early 1930's) there was much dislike of the mosaics by Pownall then being installed in the apse. When Cardinal Bourne died, the mosaics were still the subject of severe criticism and his successor Cardinal Hinsley (at the suggestion of Edward Hutton, the author, who has always taken an active interest in the cathedral) appointed, in 1935, a committee to advise him about this and similar matters.

The committee consisted at first of F. L. Griggs, Henry Harris and Prof. E. W. Tristram. They began by advising the Cardinal to remove the mosaics altogether, and their advice was taken in spite of the fact that £10,000 had been spent on them, except that the Cardinal refused to remove those over the chancel arch, which still remain. This committee, which Mr. Hutton later joined, continued in being in a general advisory capacity, one of the projects for which it was responsible being the Eric Gill altar-piece in St. George's Chapel. But when Cardinal Hinsley died and was succeeded by Cardinal Griffin, and the committee offered him the services it had given to his predecessor, he replied that he did not require advice since it might conflict with his own wishes.

It is since the committee was disbanded that the errors of taste and judgment complained of have taken place in the cathedral. When Bentley's *verde antico* column was removed, protests took the form of a plea for a new advisory committee, but the Cardinal refused. Public concern however mounted, and on November 17 last a letter of protest appeared in *The Times*. The signatories* declared that they had 'come to view with a growing disquietude the recent work of decoration' in the cathedral, and deplored in particular the removal of Bentley's columned arcade from before the Chapel of the Blessed Sacrament and the installation of panelling in coloured marbles in the gallery over the Presbytery; that is, the two recent innovations referred to above. The letter recalled the existence of the committee which had advised Cardinal Hinsley and clearly implied that a similar committee ought to be called in now.

An answer appeared in *The Times* the next day from Mgr. Collingwood, Administrator of the Cathedral, who said that Cardinal Griffin had already authorized him to gather together a group of specialist advisors, and that a consultative body was being formed. On December 16 it was announced that the following had been appointed to it: Mr. Goodhart-Rendel, Sir John Rothenstein, Prof. Thomas Bodkin and Mr. Arthur Pollen. At the time of writing (January, 1954) the committee has not yet met, and it remains to be seen how much latitude it will be given in guiding the Cardinal, his ecclesiastical officials and his architect in the direction of better judgment and respect for Bentley's intentions.

If the employment of such a committee needs more justification than the deplorable things that have been done, in the absence of any such advisory body, to what must be considered an architectural monument of national importance, it can be found in the following passage from the *Life* of the late Cardinal Vaughan, the builder of the cathedral, which was quoted in the above-mentioned letter of protest in *The Times*. In his last letter the Cardinal 'begs his Vicar-General to try to see that the future of the cathedral is not left to the whim or the taste of any one man. He takes blame to himself because he has sometimes acted without consulting others. He expresses the hope that his successor will consult laymen as well as priests upon questions concerning the administration of the cathedral and the decoration and adornment of its fabric.' **J. M. Richards**

* Sir Giles Scott, Sir Kenneth Clark, Sir Philip Hendy, Sir John Rothenstein, Mr. John Pope-Hennessy, Mr. Henry Moore, Mr. Graham Greene and Mr. Edward Hutton.

BOOKS

THE ORIGINAL SALON

LE SALON CARRÉ. *By Christiane Aulanier. Editions des Musées Nationaux, Paris.*

Christiane Aulanier's book *Le Salon Carré* is the second in her series of monographs (the first of which, *La Grande Galérie*, was reviewed here some time ago*) destined when complete to give a full picture of the history of the Louvre. The salon carré, on the first floor of the pavilion facing the cour carré, forms the junction between the galérie d'Apollon and the grande galérie. It was erected at the beginning of the seventeenth century, completely destroyed during the great fire of 1681 and at once rebuilt in its present form by Louis XIV. Its early history was intimately associated with the French royal family until Louis XIV finally transferred his residence from the palais du Louvre to Versailles. Immediately afterwards the Académie Royale was installed in the Louvre, and from that time on the salon carré has been closely associated with the artistic life of the French capital. It was here that the members of the academy regularly held their biennial exhibitions and these 'salons' rapidly became one of the most popular institutions in the cultural life of the capital.

During the French revolution the salon lost its exclusive use by members of the academy only, and its doors were opened to all French artists wishing to show their work. It was also used for the exhibition of looted treasures

The main staircase of the Musée Royal by Percier and Fontaine (begun in 1806) leading to the Galérie d'Apollon, the Rotonde and to the Salon Carré, which is illustrated on the facing page.

acquired during the Napoleonic wars, and in 1803, at Napoleon's express command, the famous Bayeux Tapestry commemorating the Norman conquest was shown there. 1848 witnessed the last 'salon' and the second empire finally abolished a tradition that had taken such a firm hold on the general public that the name 'salon' is used to this day to designate all important academic and other public

* AR, August, 1950.

exhibitions throughout France.

The author with her detailed and scholarly knowledge of every aspect of the history and architecture of the Louvre gives us a vivid and interesting account of the salon carré, taking us step by step through its brilliant and varied history down to the present day when it has been selected to house the museum's fine collection of Spanish paintings.

Marguerite Kay

INVENTORY OR GUIDE?

THE BUILDINGS OF ENGLAND—County Durham, Derbyshire, Hertfordshire, *by Nikolaus Pevsner. Penguin Books. 4s. 6d. each.*

The pattern of this series is now clear, and so, unhappily, is the dichotomy between inventory and guide; a balance was doubtless intended, but does not seem to have been struck. There are two distinct categories of buildings: the magna opera which have had splendidly broad and scholarly treatment (in the case of Durham Cathedral, one-sixth of the whole Durham volume), and the mass of less significant buildings whose descriptive text seems to have had feeling and individuality strained out to make it a comprehensive card-index. This criticism would be unjustifiable petulance did not the selection of these *chefs d'œuvre* seem strangely random. To take the three parts of Bolsover Castle, for example, the Riding School is hardly chronicled, the Gallery is fully described but not apprehended, and the notice of the Keep is a full-length character study, a creative interpretation historically and æsthetically. This, of course, does not affect its value as scholarship, but it vitiates any attempt to see the buildings as a whole, and the excellent description of some of the buildings naturally makes one wish that more could have the same treatment. Even with such reservations, however, the series is still more valuable than any other set of guides.

The published information on architects has been very thoroughly combed, and I can only add a half-dozen attributions that seem worth mentioning. In County Durham, the gothic Gatehouse at Bishop Auckland Palace was designed by Sir Thomas Robinson, and the garden gate at Raby must be Gibbs's, coming from Shipbourne church—a vicarious attribution if ever there was one. The engineer for Hartlepool Harbour was Sir John Rennie. In the Hertfordshire volume, the dining-hall to Christ's Hospital School, Hertford, was designed by James Lewis, and Cheshunt Cottage may be P. F. Robinson's 'cottage at Cheshunt for E. Clarke'—to quote Wyatt Papworth's *Dictionary*. This sort of attribution needs local research to find the link of confirmation or denial, and a similar case in Derbyshire is Wyatville's 'Bladon Hill, near Burton-on-Trent, 1799,' which is presumably Bladon Castle. Also in Derbyshire, James Wyatt worked at Sudbury Hall, so that the eyecatcher there may possibly be his, and Glossop Hall, like almost everything else in Glossop, was designed by M. E. Hadfield. At Kedleston, the plan and corner pavilions are Brettingham's, but the colonnades are Paine's—a nice distinction far less pedantic on the site than it looks in cold print.

Printing errors are inevitable, and should not be treated as a reviewer's stock-in-trade. A couple which are related to architecture, not syntax, are these: Hulland Church, Derbys., is 1837 in the introduction, 1851 in the text; and the reference to Thorpe Hall on page 254 of Hertfordshire should read Northants not Norfolk. A graver clerical error, which has appeared in other volumes, is the tendency for the indexes to tie themselves in knots when there is more than one architect of the same name.

Points like these are basically quibbles, though they could well confuse the hopeful traveller, and the books are after all designed to be used in the field. Omissions are rather different, though they depend on personal taste, and it is in any case very hard to castigate when their likelihood is so freely allowed (unlike most guide-books, which never admit such a possibility, yet leave out far more). By any standards, I think some of Francis Thompson's railway stations between Derby and Sheffield should have been included, and also possibly the remains of W. E. Nesfield's ensemble at Shipley, Derbys. Hartshorne has a house on the main road, as violently half-timbered as any in Derbyshire, which would make a good pendant to the splendidly full treatment of the limestone manor houses. The remains of Wingerworth (incidentally a very reasonable Francis Smith, of Warwick, attribution), though only a shadow of the former house, do comprise two quoined blocks themselves the size of small country houses, typical 'back-and-sides' building of the 1720's, and a graceful pair of late Georgian lodges to the S.W. In Hertfordshire, I think the Kayser-Bondor factory at Baldock, and the alarming early Victorian West Terrace at Royston deserve comment—as does the question, evident around Royston, of a whole set of racy early Victorian buildings being the work of some as yet unnamed architect. Village ensembles belong on the borderline of the series' coverage, but, as they have been mentioned in other volumes, could the first-class street of Barkway filch a few lines of description from the thirty-six given to its second-class church? Equally, Ripley (Derbys.) and Consett (Co. Durham) may have no buildings worth mentioning, but it seems only fair to say so. Both towns have a lot of robust character; Ripley in fact has a Grecian villa and a neurotic inter-war Catholic church up to the standards demanded elsewhere.

Apart from particular omissions, the lists of modern buildings in general have been strongly curtailed. This policy of 'the older the more important,' though here much tempered, is precisely that of eighteenth and nineteenth century guide-books, and its result is that we now have to seek diligently for eighteenth and nineteenth century architects: Professor Pevsner is going to leave future generations in the dark about many twentieth century buildings. Aesthetic judgment, also, must be rigorous—if the Herts. CC schools, for example, are first-rate, then they should all receive as detailed a treatment as is given to eighteenth century houses or medieval abbeys; and, conversely, rarity and age are no excuse for a catalogue of routine building in village churches.

The photographs are reproduced by half-tone in Hertfordshire (the last to appear, but presumably the first completed, being BE 7) and by photogravure in County Durham and Derbyshire (BE 8 and BE 9). The latter is a great improvement, for as well as giving a more homogeneous book, the sharpness and sense of volume makes them more alive than the glossiest of prizewinning studies. Again, I think history has got the better of æsthetics, and the desire to give in each set a microcosm of English building (surely not essential, with so many volumes) has stopped any attempt to show what is best in each county. Hertfordshire, for example, has ten photographs of medieval detail, and in only four of these does above-average quality seem evident, yet the magnificent series of early eighteenth-century town houses is represented by two, by no means the best in the county, at St. Albans. Derbyshire has one photograph of a post-reformation church and four of scenery which is typical of less than half of the county, and in any case is outside the terms of reference of the series. On the other hand, both text and photographs of Bishop Cosin's seventeenth century 'Gothic Revival' in County Durham are splendid—work which, for all that has been published on it, might as well have been created by Professor Pevsner. Yet a reviewer has doubted 'whether any useful purpose was served' by his methods in County Durham.

Appraisal from any angle comes eventually to the same unresolved ambiguity—inventory or guidebook, scholarly historicism or inspired demonstration of beauty. Could a more positive balance be achieved?—perhaps by reducing the less interesting buildings to an index, then using the space gained in spatial and functional analysis, and continual restatement of one's feelings of the goodness and badness of buildings—which must lie beyond impartiality if it is not to become yet another refuge from having to think. This would satisfy the demands of an inventory (which could then be extended to include the drab legacy of the last fifty years which would otherwise go unmentioned) and be productive of more descriptions of trans-European breadth and scholarship, like that of Durham Cathedral door-knocker—a first-class work of art put in historical perspective, and its beauty demonstrated so that one really wants to go and see it; and all done with seventy-six words and a photograph.

Ian Nairn

Books Received

MONASTIC SITES FROM THE AIR. By David Knowles and J. K. St. Joseph. Cambridge University Press. 55s.

VISION AND TECHNIQUE IN EUROPEAN PAINTING. By Brian Thomas. Longmans, Green. 18s.

ENGLISH PARISH CHURCHES. By Graham Hutton and Edwin Smith. Thames & Hudson. 42s.

THE ARCHITECTURAL HERITAGE OF NEWPORT, RHODE ISLAND, 1640-1915. By Antoinette F. Downing and Vincent J. Scully. Harvard University Press. 120s.

EARLY AMERICAN ARCHITECTURE. By Hugh Morrison. Oxford University Press, New York.

MAKE ME AN OFFER. By Wolf Mankowitz. Andre Deutsch. 7s. 6d.

HOUSING AND FAMILY LIFE. By J. M. Mackintosh. Cassell. 16s.

MEANS OF ESCAPE IN CASE OF FIRE. Pitman. 15s.

MUSICAL ENGINEERING. By Harry F. Olson. McGraw-Hill Publishing House. 55s. 6d.

THE THREE CHOIRS CITIES. By Bryan Little. Batsford. 9s. 6d.

skill

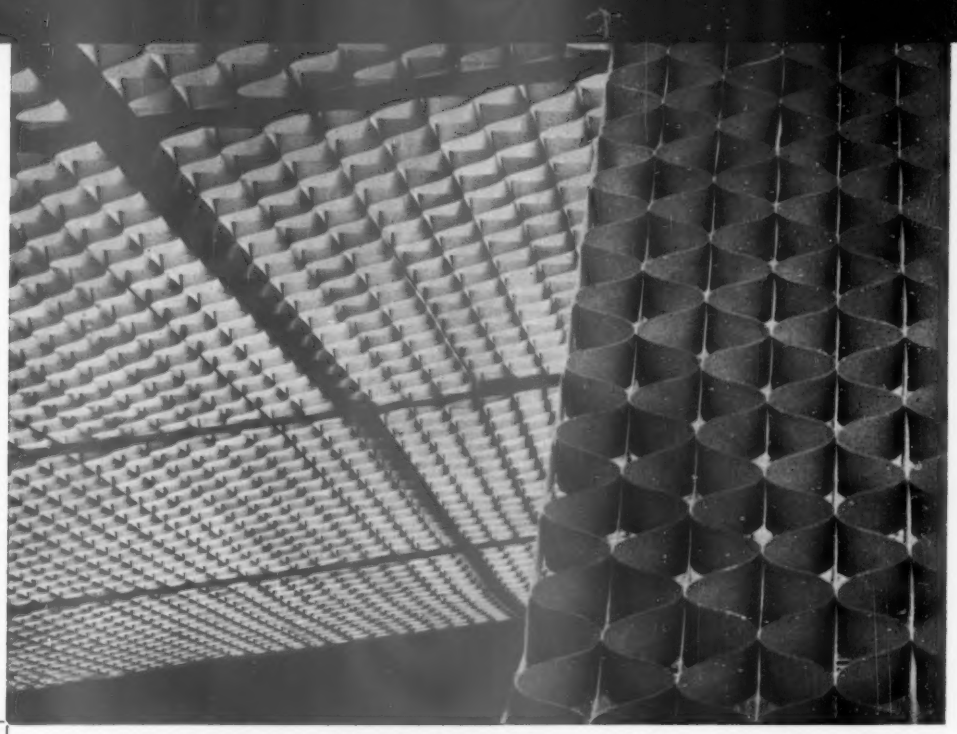
MONTHLY REVIEW OF BUILDING TECHNIQUES AND INDUSTRIAL DESIGN

In the past the REVIEW distinguished between the art and the technique of building by calling one Design, the other Craftsmanship.

Our portfolio of craftsmanship lapsed during the war and hasn't been—can't be—revived under the same title because the word 'craftsmanship' has become hopelessly dated. Why? From its association with handicrafts? From its unsuitability as a definition of precision building and manufacture? Possibly.

And yet the craft of building in the wider sense remains vital to any decent architecture and was never in greater need of encouragement by word and deed.

The editors feel the time has come to discuss the issues involved with a good deal of frankness if only to award all possible publicity to those who are keeping the flag of quality flying. They believe that the architect, and the manufacturer, will welcome a new, a bolder and a more critical approach to the whole subject. Hence this monthly feature, SKILL.



Flush mounting in the form of standard 'Difulite' cellular ceiling lighting panels. These are fabricated from 2 inch by .010 inch aluminium alloy in panels up to a maximum of 30 inch by 84 inch. Cost, under 100 square feet, 5s. per square foot, above 100 square feet, 4s. per square foot. Special prices above 1,000 square feet.

Fluorescent Light Fittings

DESIGN REVIEW

Neville Ward

The best use for fluorescent* lighting is in situations where a high intensity of illumination, with very little shadow, is required and where capital cost is of secondary importance to economies in consumption. The industry has therefore been concerned mainly with the lighting problems of large industrial and commercial undertakings and, as a result, fittings tend to be efficient and to make few concessions to appearance.

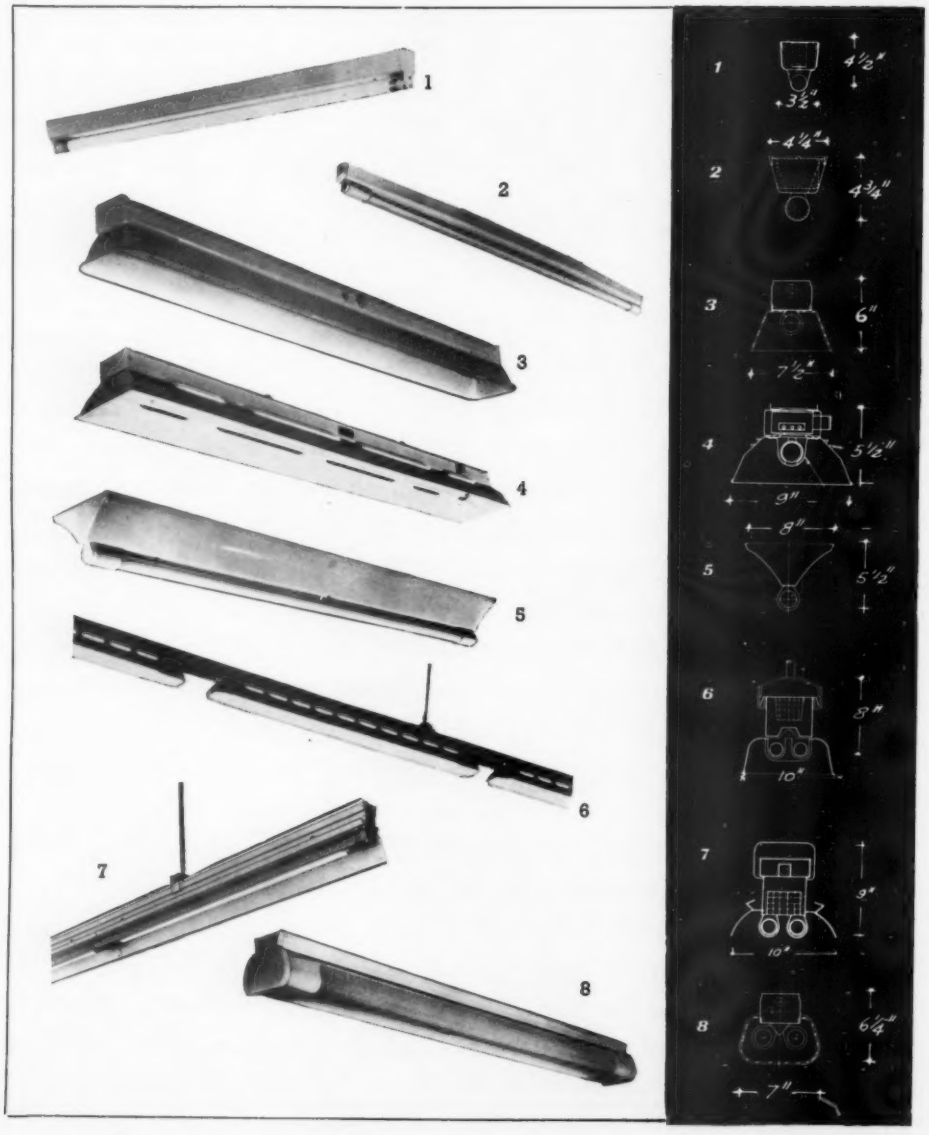
Designers of fittings for filament lamps have often drawn heavily on traditional forms of lighting from candles to the gasolier, but the fluorescent tube cannot be hidden in a lantern or under a pink silk shade, and designers have inevitably started afresh in this field.

The problem is not an easy one. The tubes give a strong directional emphasis, even in the shorter lengths, though the 5ft. one seems to be the most efficient, and is therefore more frequently used; there are unfortunate dark patches at the ends of the lamps; there is, with most circuits, bulky gear to be stowed away; the light given lacks sparkle, and its spectral distribution, differing from

* These notes are concerned with hot cathode fluorescent lighting. Cold cathode lighting presents similar design difficulties in an even more acute form. For special installations it offers the advantages of easily bent tubes and a lamp life nearly double that of the hot cathode tube.

that of ordinary incandescent light sources, seems strange and somewhat unnatural. Lastly, the concern of the industry with efficiency often means that the designer is working with lighting engineers who will not countenance the smallest sacrifice in light emitted. It is not surprising, therefore, that the number of good fittings is limited.

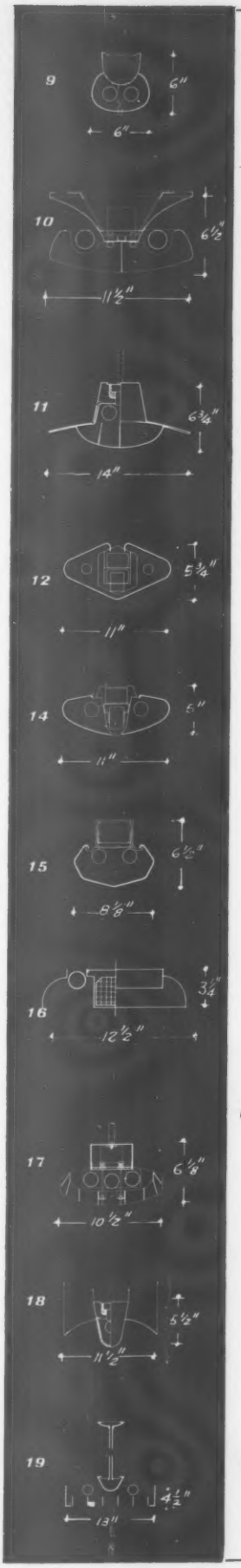
There are, however, a number of developments which may suggest new design solutions. One is a ring-shaped tube, another the use of a tungsten ballast circuit requiring much less gear and giving a mixed tungsten and fluorescent light which is rather more pleasant if a little less economical. In the meantime, the growing number of fittings for flush mounting in ceilings encourages the belief that the best thing is to hide the lamp behind louvres or obscured glass.

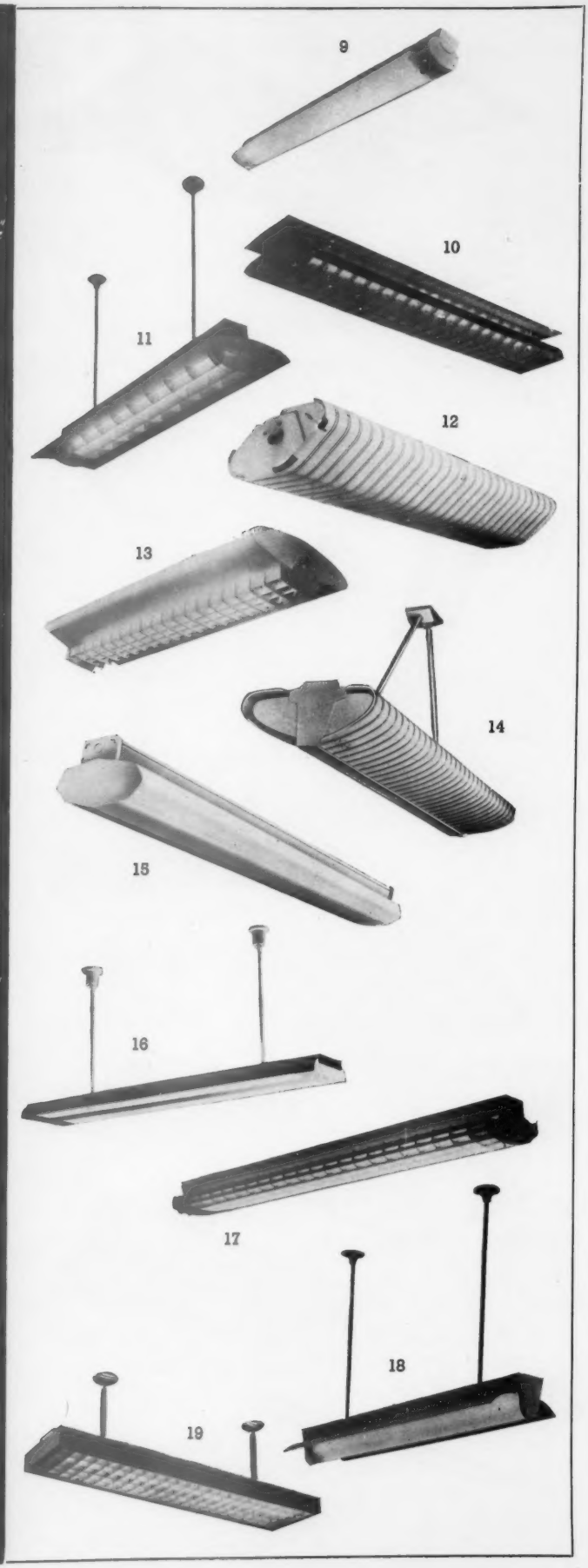


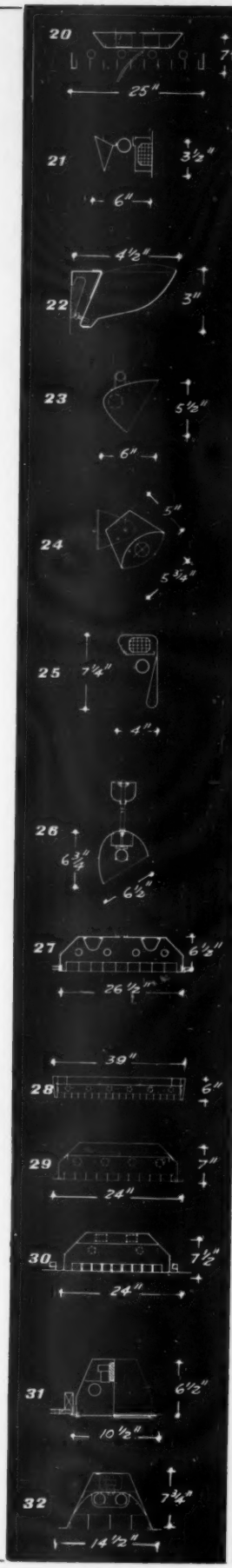
1, the basic fitting—the tube mounted on a metal channel containing the gear. The simplest and most straightforward solution. *General Electric Company, F36630, stove enamel finish with one 4-foot 40 watt lamp,* £5 13s. 11d. **2**, another version of the basic fitting, made slimmer by tapering those parts of the trough which do not contain gear. *British Thomson-Houston Co., Mazda Monolux, F1004, white stove enamel finish, with one 5-foot 80 watt lamp,* £5 10s. *inclusive.* **3**, here a translucent shade is added to the basic fitting, this tends to reduce the contrast with the background by providing an intermediate brightness and reflects some of the light downwards. *Metropolitan-Vickers,* 3790/523, *stove enamel finish to metal parts, one 5-foot* 80 *watt lamp,* £12 5s. *including fitting and gear.* **4**, in this fitting similar results are obtained with a metal shade with louvres in the top to allow some light to be thrown upwards to reduce contrast with the ceiling. *Crompton Parkinson, AO1113, stove enamel finish, one 5-foot* 80 *watt lamp,* £8 17s. 4d. *inclusive.* **5**, another method of reducing excessive contrast between light sources and background is a V-channel reflector, which has a diminishing brilliance towards the upper edges. *Metropolitan-Vickers,* 3860, *stove enamel finish, one 5-foot* 80 *watt lamp,* £7 19s. *inclusive.* **6**, a method of mounting fluorescent fittings which is becoming popular is the use of metal channels about 15 feet long, which contain gear and mount tubes and reflectors at any required interval, and at the same time carry necessary wiring. This equipment is less expensive to install than normal fittings with suspensions. *General Electric Company, Continuous Lighting Trunking, metal parts finished with zinc base undercoat, stove aluminium top coat, two 5-foot* 80 *watt lamps, per unit.* As the cost varies extensively with each individual installation, we cannot quote a price, but full particulars can be obtained from GEC. **7**, a similar arrangement with separate compartments in the channel for (*a*) power cables, (*b*) telephone and signal

cables, (*c*) lighting cables, and (*d*) fluorescent lighting control gear. *Thorn, Industrial Trunking System, stove enamel finish, two 5-foot 80 watt lamps.*

8, a simple fluted perspex shade with cast end pieces hides the tube in this fitting. *Metropolitan-Vickers,* 3791/529, *metal parts stove enamelled, two 5-foot 80 watt lamps,* £23 4s. 10d. *inclusive.* **9,** a similar fitting, but with translucent end pieces which are dense enough to conceal the outlines of the lamp holders, but allow a minimum of light to escape, giving a slightly less harsh effect. *General Electric Company,* 36576, *metal parts stove enamelled, two 5-foot 80 watt lamps,* £21 9s. **10,** here the metal louvres conceal enough of the tube to reduce glare considerably. This is also helped by the softly lit areas of the reflector. *Hume Atkins,* 42725, *stove enamelled white or cream, two 5-foot 80 watt lamps,* £15 12s. 8d. *inclusive.* **11,** a pendant fitting, while lighting the area beneath it most brilliantly, emits a gentle glow from the perspex surfaces used as reflectors and louvres. *Troughton & Young, T514P, stove enamelled off-white, two 5-foot 80 watt lamps,* £39 10s. *inclusive.* **12,** an engraved perspex diffuser which is supported by a metal channel housing the control gear. The diffuser is easily removed for cleaning. *Siemens, FTF3212, opal perspex finish, with black lines, two 3-foot 30 watt lamps,* £14 18s. 6d. *inclusive.* **13,** this is a similar fitting, but with white stove enamelled louvres and plain perspex diffuser, giving direct light downwards and general lighting through diffuser. *Siemens, FTF3232, two 3-foot 30 watt lamps,* £17 17s. 10d. *inclusive.* **14,** two opal perspex side panels with engraved pattern are supported by white enamelled members. These side and end panels, which are detachable, enclose a metal centre section housing control gear in a ventilated channel between the lamps. This and the two foregoing fittings have translucent ends. *Siemens, FTF2252, two 2-foot 40 watt lamps,* £17 17s. *inclusive.* **15,** this fitting, like 12 and 13, is a standard gear channel enclosed by a perspex envelope. *British Thomson-Houston Co., F1234/2/X/8060, metal parts finished stove enamel with a smooth perspex diffuser, two 5-foot 80 watt lamps,* £22 14s. 9d. **16,** this is a simple fitting for two 5-foot 80 watt lamps giving direct and indirect light. *Heffer & Co.,* 313*S*/2/5, *metalwork finished in ivory with contrasting end mountings,* £21 15s. 6d. *inclusive.* **17,** a three lamp fitting giving direct and indirect light. *Falk, Stadelmann & Co., S*97805 *'Colne* 3580,' *white stove enamel finish, three 5-foot 80 watt lamps,* £20 19s. 8d. *inclusive.* **18,** a simple fitting giving downward light—and with a perspex shield reducing contrast with background. *Troughton & Young, T413P, finished with off-white stove enamel, one 4-foot 40 watt lamp,* £20 6s. 9d. *inclusive.* **19,** a good, straightforward fitting with fluted aluminium frame which may be anodized or stove enamelled in colour. *Merchant Adventurers, MA615, two 4-foot 40 watt lamps,* £3 3s. 8d. *exclusive of tubes.* **20,** a similar unit, 2 foot square, for close ceiling fixing. *Mer-*





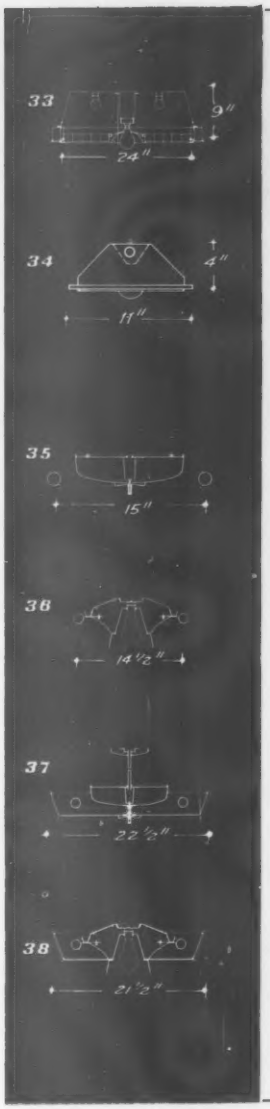


*chant Adventurers, MA*766, *four* 2-*foot* 40 *watt lamps,* £4 0s. 11d. *exclusive of tubes.* **21,** a very simple and pleasant wall fitting lighting both ceiling and working plane. *Heffer & Co.,* 400*W*/1/5, *ivory stove enamel finish, one* 5-*foot* 80 *watt lamp,* £18 10s. *inclusive.* **22,** this small unit in stove enamelled finish is intended for domestic use on A.C. mains. It can be hung on a picture rail and plugged to the nearest outlet. The life of the tube is equivalent to about five years' domestic use. *Thorn* '*Atlas*' *GH*/0040, *one* 4-*foot* 40 *watt tube,* £3 8s. 6d. **23,** this fitting has no provision for the housing of gear—which, it is intended, should be grouped at some convenient point rather than attached to each lamp in the installation. The metal tube on which lamp and shade are mounted may also carry wires where fittings are placed end to end. *Courtney, Pope, F*23, *stove enamel finish, one* 5-*foot* 80 *watt lamp,* £11 5s. *inclusive.* **24,** there are a number of fittings for directional lighting, to light walls, blackboards, showcases or displays. Adjustable angle fitting in sheet metal. *Metropolitan-Vickers,* 3875, *stove enamel finish, one* 5-*foot* 80 *watt lamp,* £9 4s. 4d. *inclusive.* **25,** this fitting, like the foregoing one, is designed for directional lighting. *Heffer & Co.,* 525*S*/1/5, *stove enamelled off-white, one* 5-*foot* 80 *watt lamp,* £21 10s. **26,** another fitting for lighting a wall. *Frederick Thomas & Co., C*2937, *rustproofed steel, stove enamelled approved colour, one* 5-*foot* 80 *watt lamp,* £12 9s. 4d. *inclusive.* **27,** the use of recessed units is becoming increasingly common—this one is intended for an aperture 25¾ inches square. *Merchant Adventurers, MA*226, *exposed portions finished in anodized silver or stove enamel, four* 2-*foot* 20 *watt lamps,* £25 15s. 2d. **28,** this unit is suitable for ceiling or flush mounting. *Courtney, Pope, C*36, *metal louvres, stove enamel finish, six* 3-*foot* 30 *watt lamps,* £39 8s. 8d. *inclusive.* **29,** this unit, 24 inches square, is intended for use with a Frenger ceiling. *Courtney, Pope, Frenger lighting panel, type* 2, *with a perspex louvre, off-white stove enamel finish, four* 2-*foot* 20/40 *watt lamps,* £22 7s. 8d. **30,** a larger unit corresponding to three Frenger panels. *Courtney, Pope, Frenger lighting panel, type* 6, *with a metal louvre, off-white stove enamel finish, two* 5-*foot* 80 *watt lamps,* £27 11s. 3d. **31,** a simple fitting for flush fixing. *Troughton & Young, T*510*G, for an aperture* 5 *feet* 4 *inches by* 9¼ *inches, off-white stove enamel finish, two* 5-*foot* 80 *watt lamps,* £21 7s. 2d. **32,** a flush ceiling fitting with hinged louvre unit, which can be completely removed by sliding off the hinge pins, it has an anodized and electro brightened reflector, which is easily detached to give access to gear. *General Electric Company, F*45509, *rust-proofed sheet steel, stove enamelled white, two* 5-*foot* 80 *watt lamps,* £23 12s. 2d. **33,** a tungsten balanced circuit ceiling unit giving mixed tungsten and fluorescent light. *Philips Rotterdam Ceiling unit, two* 4-*foot* 40 *watt lamps,* £18 6s. 5d. **34,** this fitting shows the use of a tungsten balanced circuit. The arrangement is straightforward, though it makes no attempt to utilize the tungsten lamp to give a new form to the

[continued on page 211

fitting, or to exploit the absence of bulky gear. The apertures in the reflector reduce glare by allowing some light to reach the ceiling. *Philips, Arbroath A6256, finished with grey stove enamel outside, white inside, silvered reflectors at ends, two 5-foot 80 watt lamps,* £9 7s. **35**, this fitting uses an Osram Ring Lamp giving a completely new form. *General Electric Company, F36624, cream with satin brass finish, one 40 watt Osram circle,* £6 6s. 4d. *inclusive.* **36**, this is a similar fitting using a tungsten ballast circuit. *General Electric Company, F36626, cream with satin brass finish, and white reflector, one 40 watt Osram circle,* £5 19s. 11d. **37**, this fitting has a very domestic character and is fitted with a pleated paper shade. *General Electric Company, F30503, satin brass finish, with white flashed opal glass disc, one 40 watt Osram circle,* £12 2s. 7d. *inclusive.* **38**, this tungsten ballast fitting, giving a mixed tungsten and fluorescent light, and having a non-directional form, shows the possibility of overcoming some of the difficulties of the fluorescent lighting problem. *General Electric Company, F36627, cream finish with white flashed opal glass disc and pleated paper shade, one 40 watt Osram circle,* £10 8s. 8d.

suppliers The addresses of manufacturers whose fittings are mentioned in the article above are: General Electric Company, Magnet House, Kingsway, London, W.C.2. Metropolitan-Vickers Electrical Co., Trafford Park, Manchester, 17 (*London Office*—1/3 St. Paul's Churchyard, E.C.4). Crompton Parkinson, Crompton House, Aldwych, W.C.2. Thorn Electrical Industries (Atlas), 105-109 Judd Street, W.C.1. Hume Atkins & Co., New Icknield Way, Letchworth, Herts (*London Office*—66 Victoria Street, S.W.1). Troughton & Young (Lighting), 143 Knightsbridge, S.W.1. Siemens Electric Lamps and Supplies, 38-39 Upper Thames Street, E.C.4. Heffer & Co., 17 Montpelier Street, Knightsbridge, S.W.7. Falk, Stadelmann & Co., 91 Farringdon Road, E.C.1. The Merchant Adventurers, 43 Portland Road, London, W.11. Courtney, Pope (Electrical), Amhurst Park Works, Tottenham, N.15. Frederick Thomas & Co., Everton Buildings, Stanhope Street, N.W.1. Philips Electrical, Century House, Shaftesbury Avenue, W.C.2. British Thomson-Houston Co., 18 Bedford Square, W.C.1.



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1, *Bellahøj Flats, Copenhagen. Architects: Mogens Irming and Tage Nielsen.*

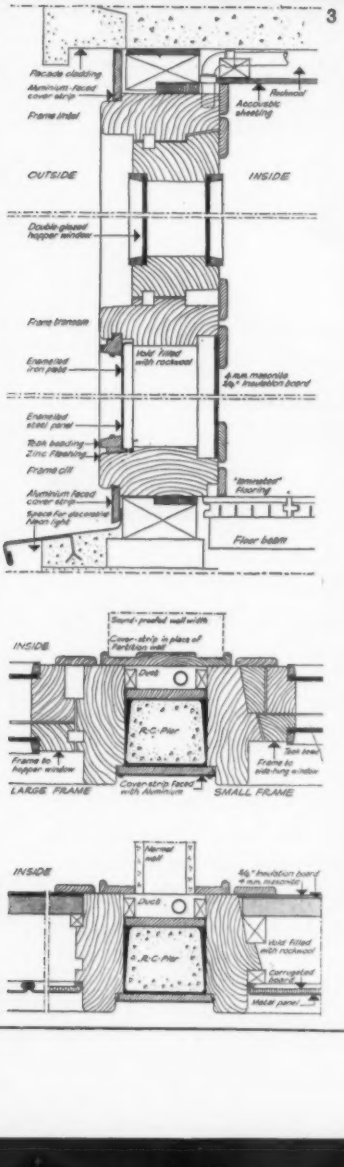
G. Anthony Atkinson

TECHNIQUES

RECENT DEVELOPMENTS IN DANISH BUILDING

Most Danish building is still carried out under a craft form of organization. Each trade—bricklayer, carpenter-joiner, plumber, etc.—in Denmark is contracted for separately. Up to now, there are few general contractors as we know them in Britain; the architect has to direct building operations, largely through his site representative, the 'Konduktør,' who incidentally is an architect and not a clerk of works.

2



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4

2, the 'Panoptikon' office block at Copenhagen. Architects: Mogens Jacobsen and Alex Poulsen. 3 and 4, working drawings and a detail of the windows showing characteristic Scandinavian joinery, reminiscent of railway carriage construction.

Even an apparent functionalism is sometimes just stucco on the staple brickwork. (I recall, on a recent visit to Copenhagen, a lengthy search by road in the south-west suburbs for what had seemed, from the train, to be a most interesting reinforced concrete box-frame construction—to find to my disgust, in the end, that the 'frame' had been stuck on in rendered brickwork.) Beneath the surface, however, Hitler's war and its aftermath have caused a profound change in the Danish building scheme; their effects are only now beginning to be seen.

BUILDING CONDITIONS

During the war it was patriotic to build slowly and expensively; by doing so, one prevented materials and labour being used on German military works. The main university building[1] (1942–46) and Town Hall[2] (1938–42), Aarhus; the new university building (1939–42) and Danish broadcasting house[3] (1937–46), Copenhagen; the town halls of Kongens Lyngby (1939–42) and Søllerød[4] (1940–42) belong to this period. After the liberation in 1945, however, things were different; the cessation of imports and the wastage of men and materials on military building during the German occupation began to be felt. There was an acute shortage of housing—yet, in 1946 new house-building reached an all-time low. As in England, building was controlled by a system of licensing, and austerity standards were introduced. Only a very few large buildings were permitted, usually—like the Aalborg Hall (1942–1952)—to replace an older building destroyed by the Germans or—like Vilhelm Lauritzen's Shell House, Copenhagen (1949–51)—by bombing. Otherwise, until controls were relaxed quite recently, little building other than housing was permitted. Fortunately for the Danish architect the housing policies of successive Danish Governments were less rigid than in Britain; they gave greater freedom, and—within limits—even financial assistance, to the individual householder who wanted to build. This meant that a number of interesting suburban and country cottages have been constructed; mostly as 'statslaan

[1] AR, November 1948.
[2] AR, August 1946.
[3] AR, July 1946.
[4] AR, May 1947.

[continued on page 21

hus' (State-loan houses) built to specified standards. Nearly all these houses, as also the terrace housing built for rental by social housing associations, follow the main Danish stream of brick-and-pantile traditionalism; a few are more experimental, influenced either by the pre-war work of Arne Jacobsen and Mogens Lassen or, more recently, by the open-plan American house.

AALBORG TOWN HALL

Aalborg Hall reflects the new trends. It is the first large, entirely post-war public building to be completed in Denmark. When German troops set fire to the old municipal assembly hall, the city fathers of Aalborg—most independent and newly rich of Denmark's large towns—at once organized, as a gesture of defiance, an architectural competition for a bigger and better hall. The fates must have approved, for the day on which the competition drawings had to be submitted—March 26, 1945—was one of the last of the German occupation; competitors handed in their designs to the gunfire of liberation. Winners of the competition were architects Preben Hansen, Otto Frankild, Arne Kjaer and civil engineer Johs. Jorgensen; runner-up was Frits Schlegel, most individualistic member of the 'rational' wing of pre-war Danish architecture, in whose office, incidentally, Preben Hansen first worked after passing out of the Royal Danish Academy School.

The winning design provides a very direct solution to the problems of building a multi-purpose hall complex. Its key is a basement cloak-room concourse, designed to give visitors the feeling that they are still in the street; this concourse runs the whole length of the building below the main hall, thus enabling the hall, when divided by a 70-ton sound-insulated moving wall, to be used for two functions at the same time. The floor of the hall is flat so that it can be used for exhibitions, banquets, etc.; but by means of an ingenious system of ramped chair-trolleys, the rear seats can be raised 12 feet above the main floor level to give good sight-lines for concerts and theatrical performances. It has also been used for a circus; its floor loading being determined by the weight of an elephant standing on one leg.

5

6

Town Hall at Aalborg. Architects: Preben Hansen, Otto Frankild and Arne Kjaer. Engineer: Johs. Jorgensen. 5, a view of the town hall at night; 6, the interior of the main promenade.

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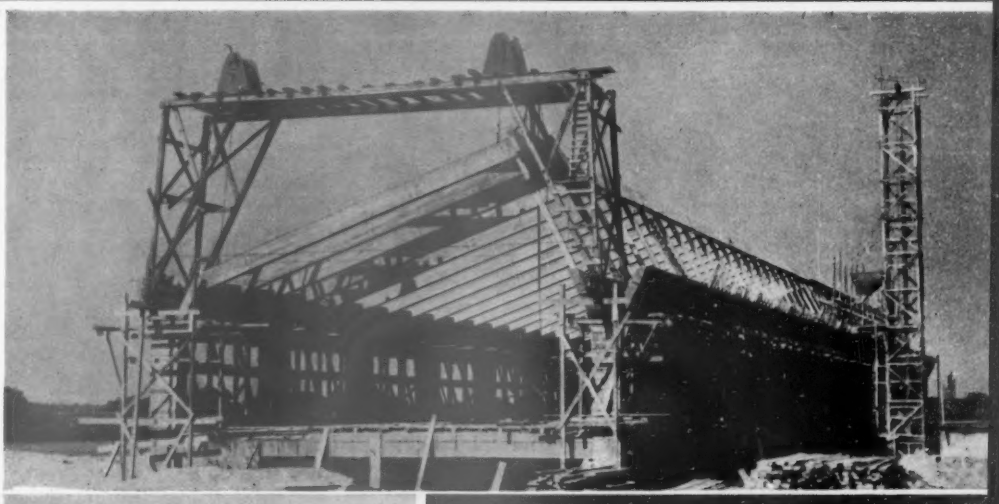

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7, progress photograph of the cigar factory at Virum, showing the use of timber scaffolding. Architect: Preben Hansen. 8, detail showing the placing of 'Chokbeton' precast concrete units. 9, the completed bay, designed for future additions.

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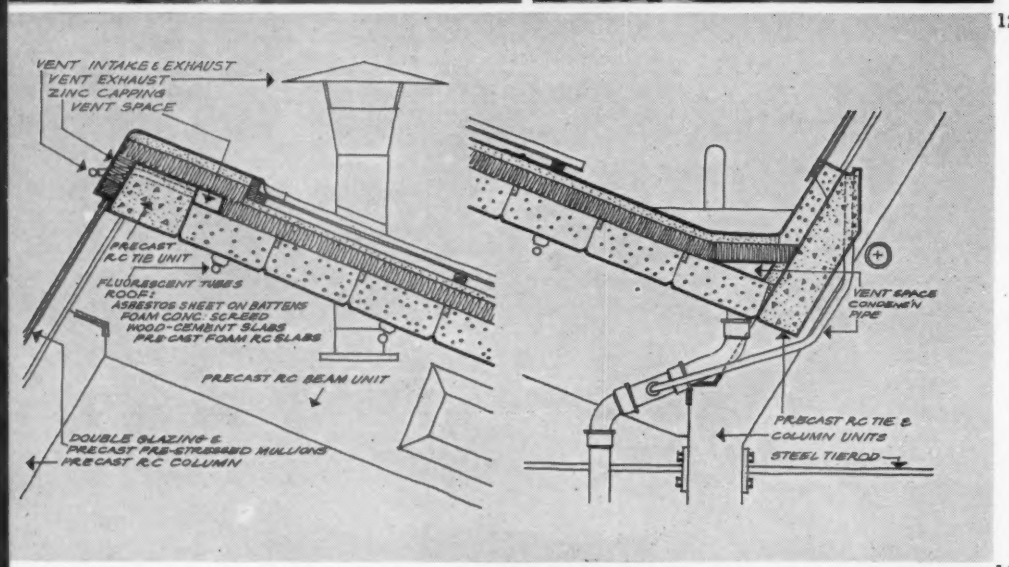

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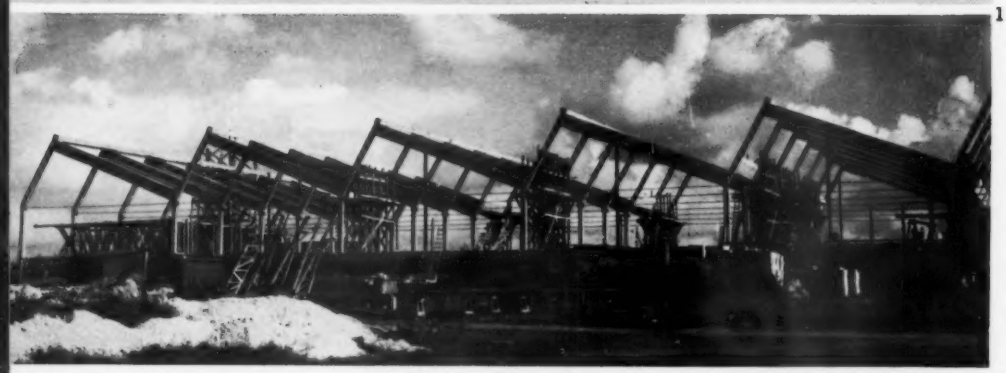


10 and 11, tobacco factory at Aalborg. Architect: Preben Hansen. The working detail, 12, shows the precast concrete north light. 13, a progress photograph.

Built of mass and reinforced concrete, Aalborg Hall turns its back on Danish brick architectural traditions. It would, anyhow, have been impossible to divert from housing the bricklayers needed if it had been built of brick; even an adequate supply of portland cement—though Aalborg is the main centre of the Danish cement industry—was often difficult to secure. Materials developed since the war are used extensively: Siporex aerated-cement blocks (now being made in Aalborg); coloured porcelain-enamel wall tiles which serve as a decorative finish to the main entrance foyer; Tygan plastic fabric, imported from Britain and used for the upholstery of the Danish plywood chairs which are the standard seating in main and secondary halls; waxed asbestos-cement slabs which serve as window sills.

COMMERCIAL BUILDINGS

The more distinguished of Copenhagen's post-war commercial buildings, Mogens Jacobsen and Alex Poulsen's eleven-storey 'Panoptikon' [p. 212] (where coloured porcelain-enamel panels, as spandrils, are used extensively), Vilhelm Lauritzen's Shell House, and the nearby head office of the 'Statsanstalten for Livsforsikring' insurance company just being completed by Mogens Lassen and Frits Schlegel—illustrate the same rational trends. Pleasantly and competently designed, they may make no significant contribution to the development of international architecture, yet, particularly in the care with which the details of construction are worked out, they set a standard for office building considerably above that usual in Britain today.

Most significant of recent developments has been in the extensive use of precast concrete elements, especially for industrial building. There is nothing particularly novel in these developments; during and since the war, precast concrete units have been used extensively in Britain. What is of interest, however, is the high quality of the products and the resulting buildings. Typical are the two factories by Preben Hansen; the C. W. Obel factory, Aalborg, and the A. M. Hirschsprung cigar factory at Virum [p. 213], industrial suburb of Copenhagen. Other industrial buildings include the Nordisk Glodelampe Industri

[continued on page 215

office and warehouse building constructed of units made by the shock concrete process which was introduced into Denmark from Holland in 1951. The developers of precast concrete systems have received considerable encouragement from the Danish Housing Ministry. As for a time in Britain, the builders of non-traditional houses receive special financial assistance from the Government; the object being to build houses additional to the capacity of the traditional building industry.

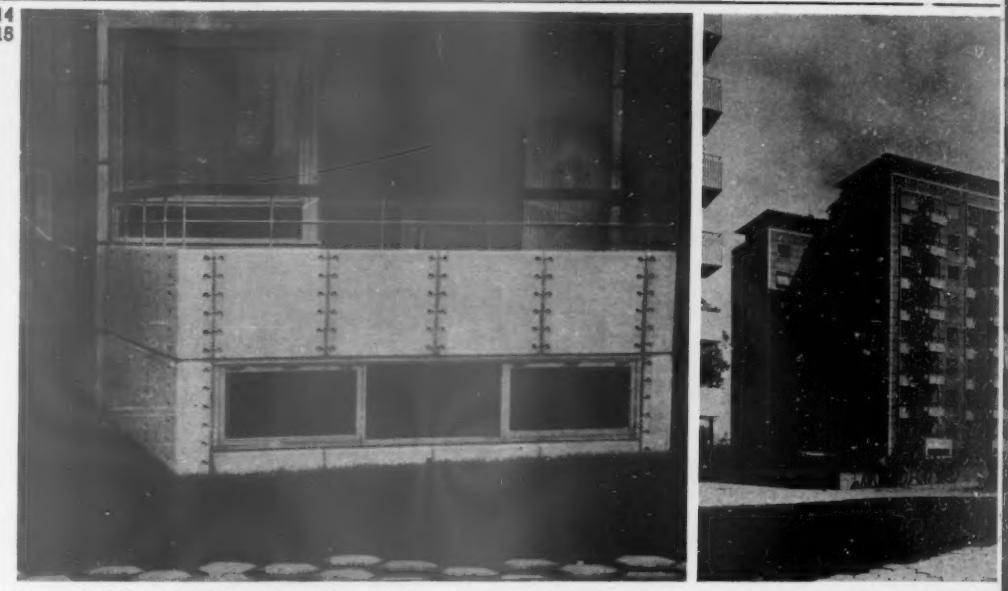
THE BELLAHØJ SCHEME

Most interesting is the Bellahøj scheme in Copenhagen. Here, under the direction of architects Mogens Irming and Tage Nielsen, nearly thirteen hundred flats are nearing completion. The site is one of the few large building sites left in Copenhagen proper; it is on high ground and close to open spaces which are being developed as a park. The layout, which was the result of a competition organized in 1944 by the owners of the site, the Copenhagen Municipality, provides for thirty point-blocks, eight to twelve storeys in height. The flats are constructed in precast concrete, a variety of systems being used. Most prominent is the Danish 'Kallton' system which consists of precast reinforced concrete column, girder and beam units. These are provided with projecting stirrups. The column units are erected in pairs, staggered to avoid continuous joints. When the units have been erected, the core is poured in situ to form a monolithic structure. The flats are clad with precast concrete units giving a variety of pattern; the quality of the workmanship of the precast work being of a high standard (see also p. 211).

CONCLUSION

To sum up, the most interesting aspect of present-day building in Denmark is not so much the contrast between the romantic and the rational in architecture as the ability of its architects to adopt, and adapt, new techniques. Principal reasons for this are the size and organization of the Danish building industry and the close co-operation which exists between architect and civil engineer. As building work in Denmark is still based on con-

14 18



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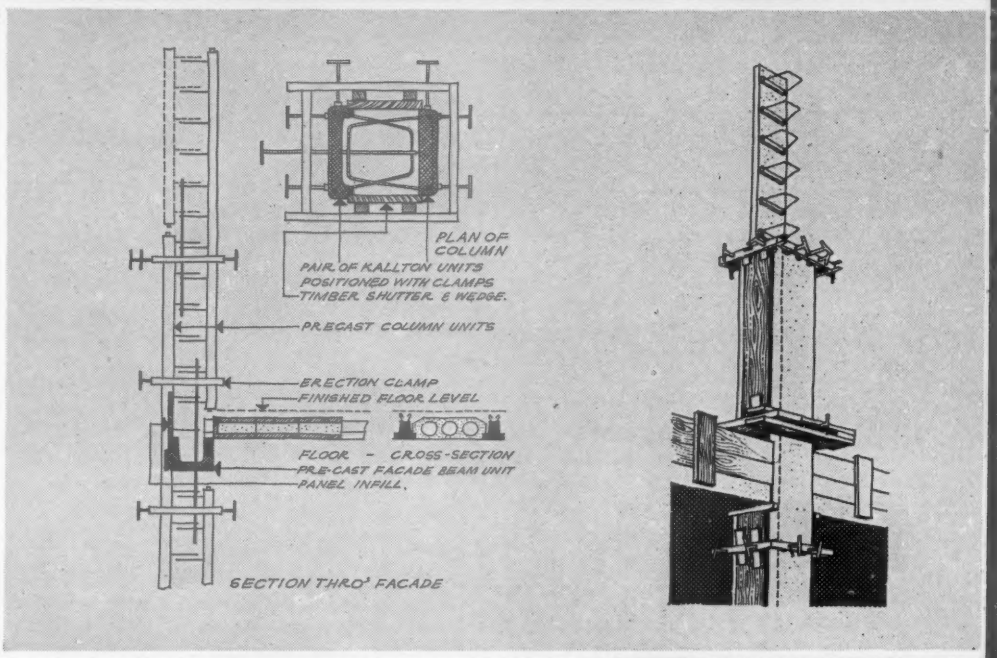

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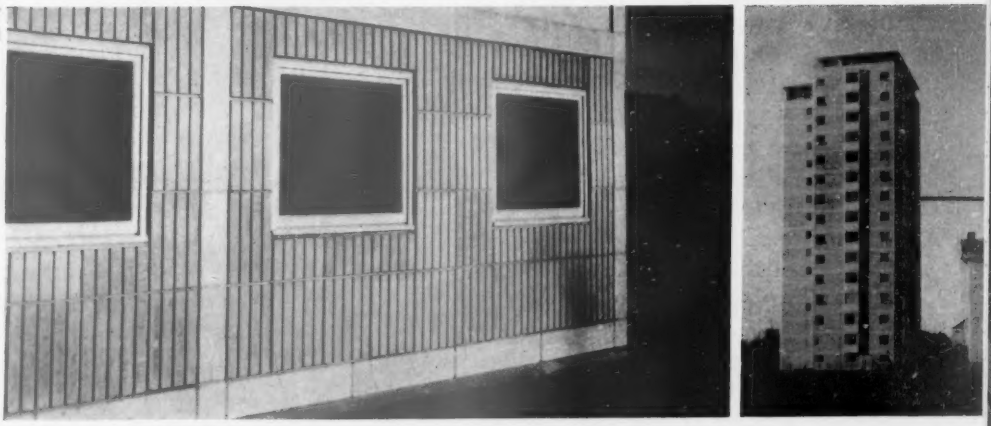
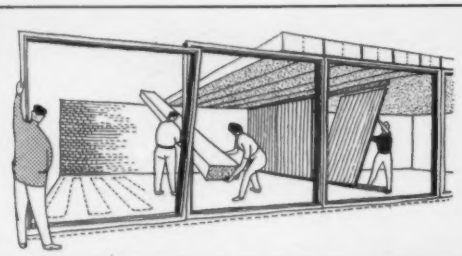
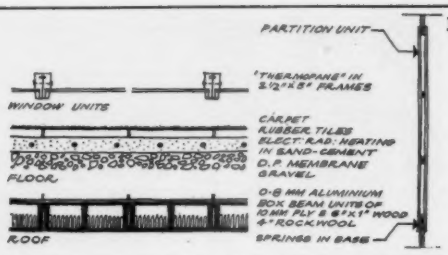


14 and 15, Bellahøj flats, built for the Copenhagen municipality. Architects: Mogens Irming and Tage Nielsen. 14, is a detail of the precast units used in the balconies. 16, the Danish 'Kallton' system of reinforced concrete framing used both in the Bellahøj flats and in the sixteen storey flats at Roskildevej, 18. Architect: A. S. Dominia. 17 is a detail of the panel walls.





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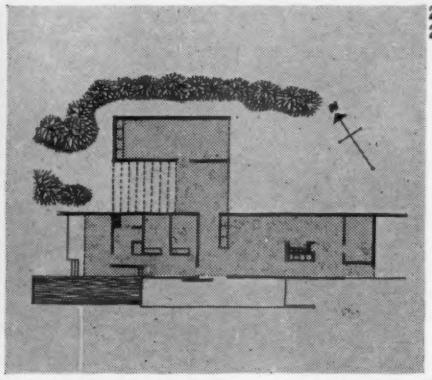

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23

19, *method of single storey house construction developed by Jørn Utzon.* 20 *and* 21, *interior and plan of the architect's own house at Hellebek where this system was employed.* 22 *and* 23, *a general view of the house and a detail of the brick rear wall.*

tracting by trades, the architect has to take the dominant role in its co-ordination. The use of the architect 'Konduktør' resident on the building site helps to make this combination possible; it also provides an opportunity for the younger architect to gain site experience in a way which hardly exists in Britain. Specialization by trades among builders has helped to maintain a high standard of craftsmanship, though it does not facilitate the introduction of new techniques. On the other hand, the wider appreciation among British civil engineers—as compared with engineers in Britain—of the aims of their architect colleagues has meant that the design of industrial buildings, like the Obel factory, Aalborg, is of a much higher standard than that used here. In Britain, to secure building work of a reasonably high quality, architects are increasingly having to turn to the nominated specialist sub-contractor and tend to consult a relatively limited circle of structural and civil engineers who appreciate their work. Is this not the Danish way of building—without the Konduktør?

MATERIALS

CAPE BLUE

Asbestos is a material which as yet has no cultural resonance. For this reason it comes as something of a surprise to learn from 'Cape Asbestos, 1893–1953'—a publication celebrating the first sixty years of the Cape Asbestos company—that it has been known on and off since Classical Antiquity and that its commercial exploitation since the late nineteenth century is of such general interest.

If it would be straining facts to speak of a South African 'Asbestos rush' in the 'nineties, it is noteworthy that the original backing came from Sir Alfred Beit and his co-directors on De Beers Consolidated, and that prophets of the time forecast that here was a richer source of wealth than diamonds. Right as they were, these had the common failure of prophets in underestimating the time it would take for this dispensation to work itself out. For—what with transport difficulties, drought, the South African War and the scepticism of consumers—Cape Asbestos was remarkably slow in making its way in the world and kept its ordinary shareholders waiting 20 years for their first dividend.

The chief spur for the early development came, not from the building industry proper, but from shipbuilding: from the insulation of ships' boilers and the fireproofing of bulkheads—for during those years fireproofing at sea was more critical than fireproofing on land. There are three kinds of raw asbestos: the white, which was the earliest known and which was quarried, first in Italy, then in Canada; the blue, which stems chiefly from the Cape; and the brown, which is exclusive

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1, *the first advertisement which appeared in* The Engineer, *July 9th*, 1897.

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Owing to present demands, supplies of facings of most types are booked for a long time ahead and reservations for 1954/5 are now being made.

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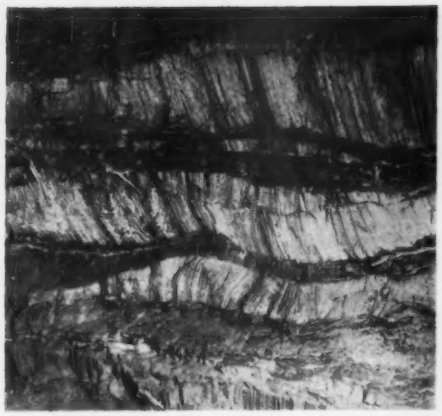
London: L.M.R. Goods Depot, Wright's Lane, Kensington, W.8. *Telephone: Western* 1281 (2 *lines*).



2, seams of amosite rock showing the great length of fibre.

to the Cape where it also goes by the name of 'Amosite.' Manufacturing plant can cope with each in turn but the blue, though it is more difficult to process, is held to be the more rewarding in use.

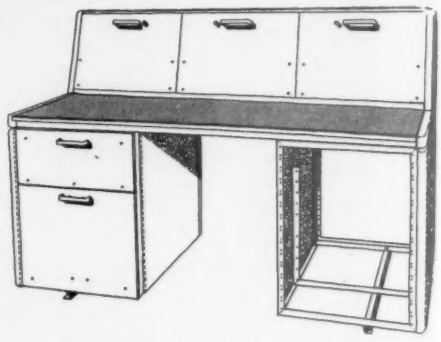
A disadvantage of asbestos sheet materials in building is that they fracture easily and for this reason the Cape Asbestos Company has, since 1951, been marketing a sheet named 'Asbestolux' which is compounded with diatomaceous earth in place of cement. This is excavated from the bed of a dried-up lake in Westmorland and is an alluvium built up of the fossils of a microscopic vegetable life, possessing insulating properties in its own right. 'Asbestolux' is tougher and more workable than the earlier type of asbestos sheeting and represents a further stage in the reduction to full human use of this basic commodity.

EQUIPMENT

CONTROL DESK

The control desk is perhaps the most recent piece of furniture to pass from the phase of 'custom built' into mass production. It appears that several manufacturers who had in the past ordered control desks from Alfred Imhof, noticed that the GPO standard sizes effectively determined the form of this piece of furniture and therefore asked the makers to evolve a standard product. This has now been done—and the cost cut by about 50 per cent.

Apart from the Formica and block board top, the desk is all steel and weighs —when the equipment is inside it—a matter of 4 to 5 cwt. The leads enter through the base and the equipment itself rests on 19-inch GPO panels which, in turn, ride on telescopic runners so that the whole can be moved out for cleaning.



The structure of the desk comprises six 2 inch by 1 inch by ¼ inch steel angle frames to which the heavy 10 gauge stove enamelled steel plates are screwed. The Formica top rests likewise on steel angles which are recessed back from the front and back faces so as to allow a free passage of air, and thus reduce condensation within the enclosed spaces.

[continued on page 220

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continued from page 218]

But the point which is of the greatest technical interest—and which at the same time articulates the job and provides its resolute, sensible appearance—is the treatment of the steel edges. In ordinary current practice this is the Achilles' heel of metal furniture, for it is exceedingly difficult to fabricate a projecting angle without leaving a sharp vulnerable point or, at best, without giving an unfortunate flavour of a cardboard box. But Messrs. Imhof have taken the trouble to cut their angles meticulously on a quadrant and to effect the join with a single invisible weld.

The desk can be varied within certain limits and is used for housing equipment apart from telephones; one of the most common alternatives being laboratory computers.

THE BUILDING INDUSTRY

ELECTRICAL TESTING

Last autumn the Electrical Development Association moved into their new Testing House (architects L. H. Bucknell and Ruth Ellis) at Leatherhead. In fact the testing work of the Association has been going forward since 1947. Initiated by the Electricity Boards this Service of the Association's has come to be used increasingly by commercial suppliers. That there is a need for it is shown by the fact that of all the appliances that have been tested during last year, 90 per cent had been found to have some defect. Tests have been devised for every kind of electrical equipment. It is interesting for architects to know that among them there is a test for systems of underfloor heating by electricity.

CONTRACTORS etc

The double glazed concrete window in the synchroton hall of the Research Building, Glasgow University (AR, Feb. 1954) designed by Basil Spence & Partners, and 'Crete-o-Lux' roof lights were carried out by Haywards Ltd. who also supplied saucer dome lights.

Garage at Loughton. *Architects:* F. R. S. Yorke, E. Rosenberg and C. S. Mardall. *Consulting engineers:* Clarke, Nicholls & Marcel. *Quantity surveyors:* Cyril Sweett & Partners. *Consultants to L.T.E. for Heating, Ventilation and Electrical Installation:* Oscar Faber & Partners. *General contractors:* Gee, Walker & Slater Ltd. *Clerk of Works:* G. H. McGuire. *Sub-contractors: Structural steelwork:* Power's & Deane Ransome's Ltd. *Electrical installation:* Troughton & Young Ltd. *Heating and ventilation:* Richard Crittall & Co. *Metal windows, patent glazing, steel doors and screens:* Williams & Williams Ltd. *Plumbing and drainage:* Richard J. Audrey Ltd. *Sprinkler system and fire door:* Mather & Platt Ltd. *Sliding folding doors:* G. W. King Ltd. *Roller shutters:* Haskins Rolling Shutters. *Tiling:* Carter & Co. (London). *Grano:* Prodorite Ltd. *Steel roof decking:* The Ruberoid Co. *Roofing:* William Briggs & Sons. *Trench covers and gratings:* Lionweld Ltd. *Trench covers:* Meadow Foundry. *Asphalte tanking:* Neuchatel Asphalte Co. *Manhole and trench covers:* Broads Mfg. Co. *Bollards:* Girlings Ferro-Concrete Co. *Railings and steel ladders:* The Wessex Guild Ltd. *Fuel oil tanks:* Wayne Tank & Pump Co. *Sanitary fittings:* Stitsons Sanitary Fittings Ltd. *Facing slabs:* Orlit Ltd. *Kitchen and plumbing services:* Benham & Sons. *Staircase balustrade and duct grilles:* Wainwright & Waring Ltd. *Glazing gantry:* F. & R. Edbrooke Ltd. *Ventilation cowl:* Light Steelwork (1925) Ltd. *Bricks:* London & Sussex Merchants Ltd.; E. H. Smith (London) Ltd. *Boilers:* Beeston Boiler Co. *Steel cupboards:* James H. Randall & Son. *Miscellaneous metal work:* Clark Hunt & Co.; Frederick Braby & Co. G. A. Harvey & Co. (London). *Traffic office counter:* H. N. Barnes Ltd. *Glascrete roof lights:* J. A. King & Co. *Glass dome lights:* Pilkington Bros. *Tanks (oil):* Richard Thomas & Baldwins Ltd. *Suspended ceilings:* Dejongs. *Ironmongery:* Alfred G. Roberts Ltd. *Vacuum services:* British Vacuum Cleaner & Eng. Co.

Garage at Stockwell. *Architects:* Adie, Button & Partners, in association with Thomas Bilbow, architect to the London Transport Executive. *General contractors:* Wilson Lovatt & Sons. *Sub-contractors: Demolition:* London Demolition Co.

[continued on page 222

Floors of Distinction

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continued from page 220]

Foundations: Cementation Co. *Asphalte:* General Asphalte Co. *Bricks:* Hall & Co. *Stonework:* South Western Stone Co. *Structural steel:* Concrete & Structural Products Ltd. *Sprinklers:* Mather & Platt Ltd. *Tiles:* Jaconello Ltd. *Faience:* Wiggins-Sankey Ltd. *Roofing felt:* Super-Phalt Ltd. *Glazed partitions, windows and window furniture:* Mellowes & Co. *Patent glazing:* Williams & Williams Ltd. *Woodblock flooring:* Improved Wood Pavement Co. *Central heating:* C. N. Haden & Sons. *Boilers:* Prior Stokers Ltd. *Electric wiring:* T. Clarke & Co. *Electric light fixtures:* Metropolitan-Vickers Electrical Co. *Plumbing:* Z. D. Berry & Sons. *Sanitary fittings and door furniture:* W. N. Froy & Sons. *Rolling shutters:* Mather & Platt Ltd.; G. Brady & Co. *Sliding doors:* E. Hill Aldam & Co. *Frames to attendant's office:* W. James & Co. *Granolithic and plaster:* Plastering Ltd. *Metalwork:* Light Steelwork (1925) Ltd.; George Wright (London) Ltd. *Joinery:* D. Burkle & Son. *Linoleum:* Cellulin Flooring Co. *Plastic tiles:* Semtex Ltd. *Cycle stands:* Abix Ltd. *Hoists:* A.C.E. Machinery Ltd. *Signs:* Pearce Signs Ltd. *Fuel tanks:* J. Bellamy Ltd.; Tecalemit Ltd.

Five Typewriter Showrooms. *Designer:* Gordon Andrews. Berkeley Square, Kingsway, London, and Watford. *General contractors:* G. & W. Waller Ltd. *Sub-contractors: Chairs, occasional tables and rugs:* Story & Co. *Laminated chairs and trestle tables:* S. Hille & Co. *Light fittings, showcases and flooring:* Designed by Gordon Andrews under Waller's supervision. Leicester. *General contractors:* Craven (Builders) Ltd. Nottingham. *General contractors:* George Bastable. *Sub-contractor: Curtains:* David Whitehead Ltd.

Laboratories and Boiler House at Watford, Herts. *Superintending Architect:* A. C. Hopkinson of the Chief Architect's Division, MOW. *Assistant-in-charge:* F. L. Mason. *Quantity surveyors:* MOW. *General contractors:* Haymills (Contractors) Ltd. *Clerk of works:* G. W. Coupe. *Agent:* J. Swain. *General foreman:* W. Haynes. *Sub-contractors: Roads:* General Asphalte Co. *Asphalt:* Faldo Asphalte Co. *Chimney stack:* Custodis (1922) Ltd. *Bricks:* Henry J. Greenham (1929) Ltd. (multi-facing); Cement Marketing Co. (London stocks). *Structural steel:* Redpath Brown & Co. *Hollow tile roofs:* Frazzi Ltd. *Roofing felt:* Ruberoid Co. *Patent glazing:* W. H. Heywood & Co. *Glass and dome lights:* Faulkner Greene & Co. *Quarry tile and grano flooring:* Alan Milne Ltd. (Flooring Division). *Heating, hot water supply, steam and gas services:* William Freer Ltd. *Boilers:* Cochrane & Co. (Annan). *Electric installation:* Electra (B'ham 1935) Ltd. *Fume and dust extraction:* British Vacuum Co. *Plumbing:* Alan Milne (Plumbing Division). *Metal casements:* Maclean & Co. (Metal Windows). *Library furniture:* Edmonds, Birmingham (under Controller of Supplies Division, MOW). *Cranes:* Wharton Crane & Hoist Co. *Fire proofing to laddering and catwalk:* Albi-Willesden Ltd.

Community Hall, Hemel Hempstead New Town, Herts. *Chief architect:* Hemel Hempstead Development Corporation, H. K. Ablett. *Assistant chief architects:* P. R. Bee, H. Schofield. *Senior assistant architect in charge of contract:* M. Hardstaff. *Assistant architects on contract:* T. L. Lilley, P. E. Sadler. *Landscape architect:* N. H. J. Clarke. *General contractors:* Brown & Clark Ltd. *Sub-contractors: Metal windows and doors:* The Crittall Manufacturing Co. *Electric heating and lighting:* The Eastern Electricity Board. *Copper roofing:* Broderick Insulated Structures Ltd. *Bituminous felt roofing:* Permanite Ltd. *Maple strip flooring:* Hollis Bros. Ltd. *Cork flooring:* The Resilient Tile & Flooring Co. *Thermoplastic floor tiles:* The Marley Tile Co. *Counters and fitments:* Central Shopfitting (London) Ltd. *Metalwork:* J. W. Cubbage & Son; McLaren Johnson & Co.; Clark, Hunt & Co. *Firefighting equipment:* L. & G. Fire Appliance Co. *Lighting fitments:* Troughton & Young (Lighting) Ltd. *Mats:* The General Welfare of the Blind. *Lettering:* The Lettering Centre. *Sound equipment:* Tannoy Products Ltd. *Stacking chairs and tables:* Metchair Ltd. *Mirrors:* James Clark & Eaton Ltd. *Door furniture:* Alfred G. Roberts Ltd. *Sanitary goods:* Sharpe & Fisher Ltd.; Ashley Brandon (Kensington) Ltd. *Doors:* Walter Lawrence & Son. *Curtains:* C. S. Everett. *Clips for dance floor:* J. C. Birch Ltd. *Drugget:* Burfield & Son. *Paint:* Hadfields (Merton) Ltd.; The Inertol Co.

Primary School at Coventry. *Architects:* Architects Co-partnership. *Quantity surveyors:* Davis, Belfield & Everest. *Consulting electrical engineer:* H. A. Sandford. *General contractors:* Garlicks Ltd. *Sub-contractors: Structure:* Hills (West Bromwich) Ltd. *Heating:* Weatherfoil Heating Systems Ltd. *Boilerhouse chimney:* Chimneys Ltd. *Electricity:* Francis L. Flinn. *Roofing:* William Briggs & Sons. *Flooring:* Premier Tile Co. (Coventry); Horsley, Smith & Co. (Hayes); Jaconello Ltd. *Concrete and quarry tiles:* Coventry Tile Co. *'Bellrock' partitions and fibrous plaster:* Plaster Decoration Co. *Sanitary fittings:* Adamsez Ltd. *Copper wastes:* Econa Modern Products Ltd. *Flush doors:* Linden Doors Ltd. *Classroom window cills:* E. Harris & Son (Coventry). *Venetian blinds:* London Blinds. *Ironmongery:* Mountford Bros. Ltd. *Towel bins:* T. Wilkes & Sons. *Decorating and water supply:* Daly & Son. *Curtains:* Gerald Holtom. *Radio:* Clarke & Smith Manufacturing Co. *Precast manholes:* Trollope & Colls Ltd. *Concrete flower pots:* Walter Lawrence & Son. *Fencing:* Boulton & Paul Ltd. *Tarmac:* Turrif Construction Corporation Ltd. *Lighting fittings:* Falk, Stadelmann & Co. *Extract fans:* Greenwoods & Airvac Ventilating Co. *Portable stage units:* Geo. M. Hammer & Co. *Paint and oil:* Docker Bros. *Chlorinated rubber:* Tretol Ltd. *Hosereels:* The Pyrene Co.

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